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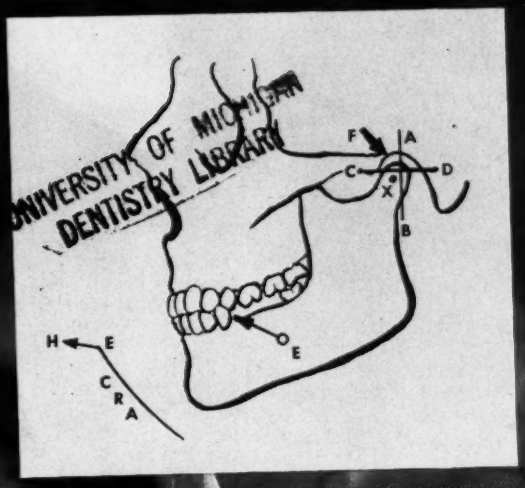

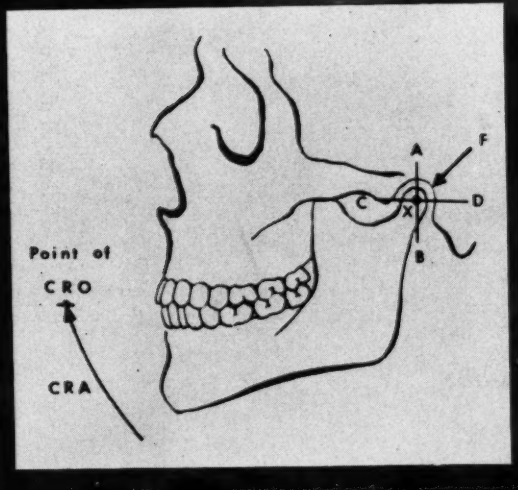

September 1960

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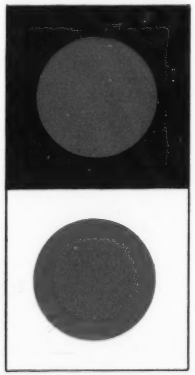
Cover Illustration—Shore article, page 406

COLOR . . . plays tricks

in selecting anteriors for your next full or partial denture... consider the influence of environment on color



★ ★ ★ ★ ★ ★ the size and color of the red discs within the black and white squares are identical although they *appear* to differ in both size *and* color . . . this is an optical illusion created by environment.

Tooth colors are subject to these same influences of light and environment—making the Dual-Dial Color System specially interesting and helpful in the quest for "living" esthetics.

In full and partial denture prosthetics, too, color can play tricks. It is therefore not sufficient merely to match tooth colors . . . it is *even more* essential to select tooth colors having *ability-to-blend* . . . and thus to "come alive" in the oral environment. This is the phenomenal color characteristic that distinguishes Univac Porcelain and Verident Plastic above all other anteriors—assuring a *natural beauty*—so gratifying to the patient.

Univac and Verident tooth materials and their pigmentation were developed with special optical properties. Refraction and absorption of light approximate those of living teeth. Univac Porcelain and Verident Plastic colors are completely free of the lifeless, greenish cast found in other color systems. Further, the methods used in incorporating these specially selected, pigmented materials in the tooth mold, enable you to grind, and if necessary, even to re-shape the tooth—*without altering original tooth color!*

Natural tooth colors are almost infinite in number. In every dentition there are variations between centrals, laterals and cuspids. This recognized fact demonstrates the esthetic importance of "blending ability", . . . *an inherent characteristic of UNIVAC Porcelain and Verident Plastic Anteriors.* Also, the different colors of the UNIVAC Porcelain and Verident Plastic Dual-Dial Color Guide *harmonize with each other,* allowing full freedom to reproduce natural variations of color in the same denture.

Dual-Dial colors are incredibly "alive", complementary and consistent . . . close up, as well as across the table . . . without a trace of greenish cast, indoors and outdoors under all normal lighting conditions. You'll prove this in every case as UNIVAC Porcelain and Verident Plastic teeth blend within the oral environment. You see only the smile—not the teeth. The patient is gratified . . .

Correct color and "blendability" . . . Key successful esthetics . . . *they are the Dual-Dial Color System* . . . the basis for the great, growing acceptance of Dual-Dial Color, for UNIVAC Porcelain and Verident Plastic.

UNIVAC
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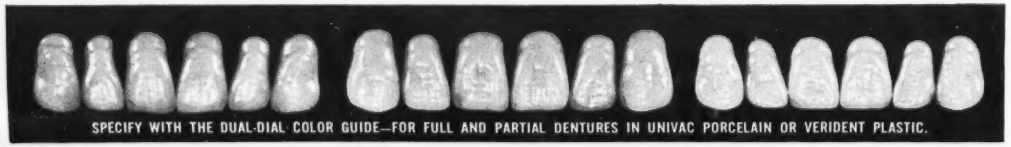
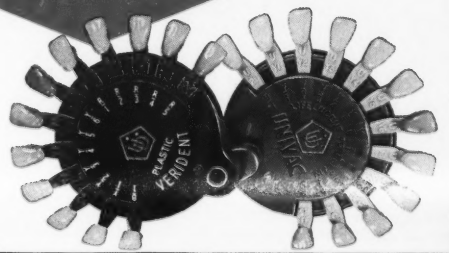
VERIDENT
PLASTIC ANTERIORS



SPECIFY WITH THE DUAL-DIAL COLOR GUIDE—FOR FULL AND PARTIAL DENTURES IN UNIVAC PORCELAIN OR VERIDENT PLASTIC.

DUAL-DIAL TOOTH COLORS PRESENT AN "ALIVE" APPEARANCE AND BLEND UNDER ALL NORMAL LIGHT AND ENVIRONMENTAL CONDITIONS . . .



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About Our CONTRIBUTORS

Nathan Allen Shore, D.D.S. (Marquette University Dental School, 1939) is a member of the American Equilibration Society, the New York Academy of Dentistry, the Society of Oral Physiology and Occlusion. Doctor Shore has an enviable record of contributions to dentistry having published many articles; a book, OCCLUSAL EQUILIBRATION AND TEMPOROMANDIBULAR JOINT DYSFUNCTION, published by Lippincott; and a motion picture which is included in the Film Library of the American Dental Association. He is an experienced teacher and in personal practice emphasizes the treatment of temporomandibular joint dysfunction and rehabilitation. His first article to appear in DIGEST, TEMPOROMANDIBULAR JOINT DYSFUNCTION AND PATHOLOGIC OCCLUSION, will be presented in two parts. Part One is in the current issue.

Harry L. Page is well known as a regular contributor of many original and analytic articles on prosthetic subjects. In this issue Mr. Page publishes the second and final installment of his current article, HINGE-AXES: ARGUMENTS AND TYPICAL EXAMPLES: PROOF.

David N. Epstein, D.D.S. (New York University, College of Dentistry, 1954) is practicing general dentistry in Ithaca, New York. Before entering practice Doctor Epstein served a one-year rotating internship in Fitzsimons General Hospital, Denver, Colorado. His first article to appear in DIGEST is THE TECHNIQUE OF GINGIVECTOMY in the current issue.

Frank A. Strake, D.D.S. (St. Louis University School of Dentistry, 1927) who specializes in prosthetics, and his co-author, Ross L. Chase, D.D.S., (St. Louis University School of Dentistry, 1916) who practices oral surgery have published previously on the subject of the implant prosthesis. For their first appearance in DIGEST they have collaborated on SECOND STAGE SURGERY: INSERTION OF THE IMPLANT SUBSTRUCTURE AND SUBSEQUENT PROSTHODONTICS.

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TEMPOROMANDIBULAR JOINT *Dysfunction and Pathologic Occlusion** *Part One*

NATHAN ALLEN SHORE, D.D.S., New York

DIGEST

In the application of physiology to dentistry the significance of minute degenerative changes of the tissues of the masticatory organ has received insufficient emphasis. Evidence of this degeneration is actually demonstrable in the masticatory organ. Frequently the onset of this process is so minute and seems so trivial that it is difficult to detect and distinguish from the normal condition. For this reason the entire masticatory organ must be examined thoroughly for minor deviations from the normal. A complete understanding of each sign and symptom, interpreted as a result rather than as a cause for degeneration and dysfunction, will aid in diagnosis. This article is the first of two on this subject, and discusses the first of the five classifications of habitual convenience relationships.

Interference with Normal Function

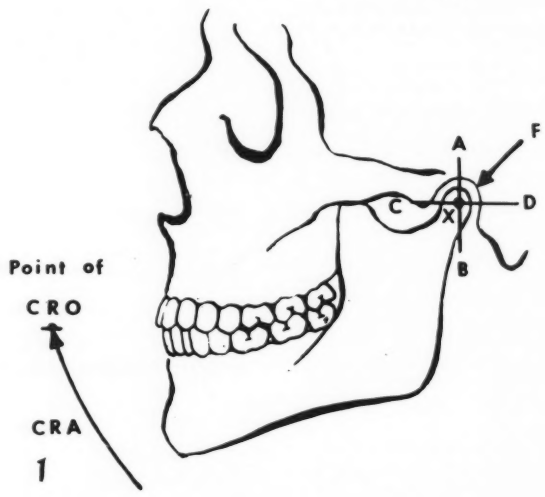
Since the components of the stomatognathic system are closely interrelated, pathologic conditions in one part always affect other parts to a greater or a lesser degree. Abnormal or pathologic occlusion results in abnormal function of all the other parts of the stomatognathic system and especially of the temporomandibular joints. A change in the position of the teeth usually results in a change in the position of the mandible and of both condyles.

Compensatory Movement Required—If the condyle in one joint moves in one direction, the other condyle must make a corresponding and compensatory movement because the mandible is a single U-shaped bone. If these shifts are caused by abnormal or pathologic occlusion, minute or gross pathologic effects on the structures of the temporomandibular joints must take place, and these will be accompanied by various symptoms.

Disturbance of Interrelationships Results in Disease—It is the direction and the frequency of stress that are most important. The fundamental researches of Bernard[1] and Cannon[2], into the complex interrelationships between structure and function, showed that whenever there is interference with normal function there is disease.

Centric-Relation Interfering Occlusal Contact

In order to classify and diagnose the various kinds of pathologic occlusion, it is of paramount importance to clarify the basic principles

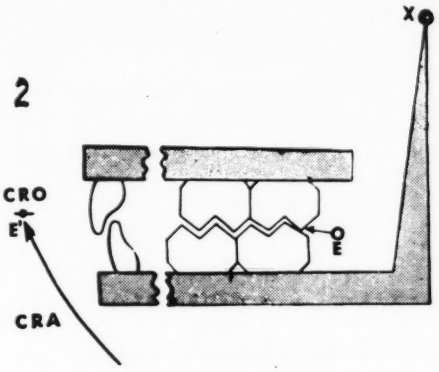


1.
Centric-relation occlusion, profile view. Centric-relation arc, CRA, terminates at CRO, centric-relation occlusion, in harmony with the hinge-axis, X, of the temporomandibular joint. The imaginary lines AB and CD cross one another at a point identical to X. Note the equal spacing of the normal joint gap, F, between the fossa and the condyle.

*From the Department of Surgery, The New York Hospital-Cornell Medical Center.

[1]Bernard, C.: De la physiologie générale, Paris, Hachette, 1872.

[2]Cannon, W. B.: The Mechanical Factors of Digestion, New York, Longmans, 1911, p. 8.



2.
Schematic representation of an interfering occlusal contact at E in centric relation. Centric-relation arc, CRA, stops at E′ and cannot reach centric-relation occlusion, CRO. X again represents the hinge-axis.

of centric-relation occlusion.

Fundamental Principles—When the teeth occlude in harmony with one another and are in harmony with all the other parts of the masticatory system, they are in centric-relation occlusion. This is schematically illustrated by Figure 1.

Figure 1 Described—CRA is the centric-relation arc described by the teeth to point CRO, centric-relation occlusion. The teeth are now in terminal closure and the cusps rest in their opposing fossae. The dot, X, in the center of the condyle, represents the hinge-axis of the temporomandibular joint. The point where the imaginary lines AB and CD intersect represents the axis of the centric relation arc and the center of the glenoid fossa.

Identical Points Noted—Note that the lines AB and CD schematically cross one another at a point identical to the hinge-axis of the temporomandibular joint. When the teeth close in centric-relation occlusion, these two points are always identical. Note the equal spacing of the normal joint gap, F, between the fossa and the condyles.

Cause of Pathologic Occlusion—The centric-relation interfering contact is the primary cause of pathologic occlusion. In contrast to the normal representation in Figure 1 is Figure 2, the schematic visualization of an interfering occlusal contact. The interfering occlusal contact at E prevents the cusps from meeting the fossae. The centric-relation arc, CRA, stops at point E′ and cannot reach the point of centric-relation occlusion, CRO. Again X is the center of rotation or hinge-axis.

Habitual Convenience-Relationship Occlusion—As shown in Figure 3 the cusp slides on the inclined plane of the interfering contact at E, and the mandible moves into a convenience relationship. The forward shift of the jaw is indicated by the line E′N. Because of the weakness of the surrounding alveolar bone, the upper tooth, F, is pushed forward (the original position of the tooth is represented by the dotted line).

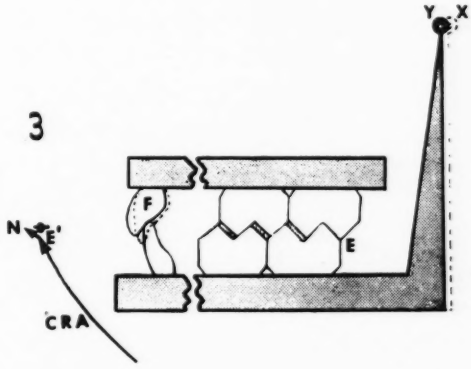
Second Illustration—In the habitual convenience-relationship occlusion shown in Figure 4 the surrounding alveolar bone of the tooth is strong. Consequently, the tooth is gouged out at R. The forward shift of the jaw, E′N, and the forward pull of the condyle to Y are the same as in Figure 3.

Composite Picture—These generalizations present a composite picture of what happens when an interfering occlusal contact occurs. All of the other parts of the masticatory system are affected: (1) the cuspal contacts of the rest of the teeth are changed, (2) the centric-relation arc is altered, (3) the positions of both condyles are changed, and (4) the neuromusculature is thrown off balance.

Class I: Pathologic Mandibular Protrusive Relationship

Based on the research of Morris[3] there are five main classes of pathologic mandibular positions, or habit-

[3]Morris, H.G : Pathological Temporomaxillary Mandibular Relation, J. Periodont. **22**:216 (Oct.) 1951.



3.
Habitual convenience-relationship occlusion. Interfering occlusal contact at E results in a protrusive shift of the mandible, indicated by line E′N. The upper tooth, F, is pushed forward because of the weakness of the surrounding alveolar bone; the original position of the tooth is shown by the dotted line. Note that the condyle has been pulled forward from X to Y.

ual convenience relationships, produced by interfering occlusal contacts in centric relation. The first of these classifications, that of the pathologic mandibular protrusive relationship, which is the one most frequently seen in dental practice, is discussed in this article.

Almost Always Unilateral—Figure 5 is a schematic representation of pathologic mandibular protrusive occlusion, with the interfering occlusal contact occurring at E. The mandible passes through the centric-relation arc, CRA, toward terminal closure and is deflected into the habitual convenience relationship, H, moving through the protrusive medial path, EH. Compare this picture with that of a normal centric-relation occlusion, as shown in Figure 1.

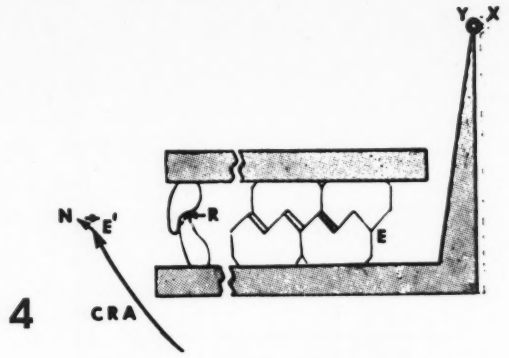
Axis of the Central-Relation Arc—In both pictures the dot, X, in the center of the condyle, schematically represents the hinge-axis of the temporomandibular joint. In Figure 1 the point of intersection of the imaginary lines AB and CD represents the axis of the centric-relation arc, and is identical to the hinge-axis of the temporomandibular joint.

Shift of Mandible Alters Position of Condyle—In Figure 5, however, because of the protrusive and medial shift of the mandible, the left condyle is positioned anteroinferiorly and medially, consequently the dot, X, is no longer identical to the axis of the centric-relation arc.

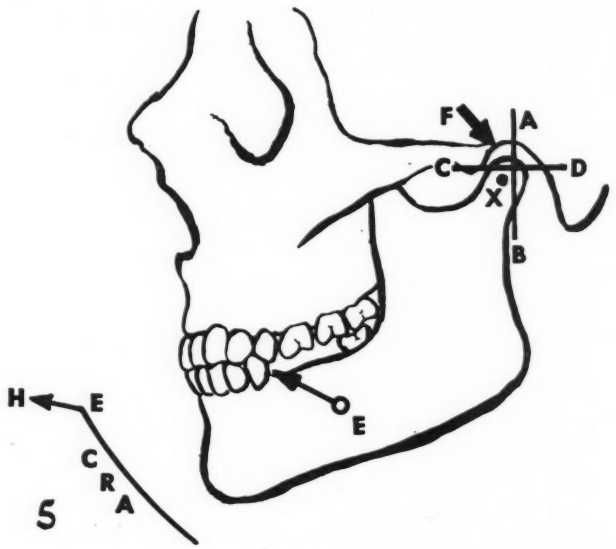
Results of Mandibular Shift—The protrusive and medial shift of the mandible in the direction of the arrows is shown in the occlusal diagram of Figure 6a. Figure 6b is the frontal view of the centric-relation arc, CRA, and the resultant medial mandibular shift from E to H. This shift takes place after the interfering occlusal contact has deflected the mandible into the habitual convenience relationship at H. In Figure 6c is shown a medial view of the interfering contact between the mesiolingual plane of the buccal cusp of the upper second bicuspid and the distobuccal plane of the buccal cusp of the lower second bicuspid.

Trauma May Be Produced—The diagonal shift of the mandible in Figure 6a often produces trauma to the upper and lower teeth of the side opposite the interfering contact. In Figure 6a the small black dots indicate the areas of contact made by the buccal planes of the buccal cusps of the lower teeth with the lingual planes of the buccal cusps of the upper teeth. The arrows indicate the direction of movement of the lower contacting teeth. The upper and lower teeth may be traumatized because the buccal cusps of the upper teeth are stationary and overhang the moving buccal cusps of the lower teeth.

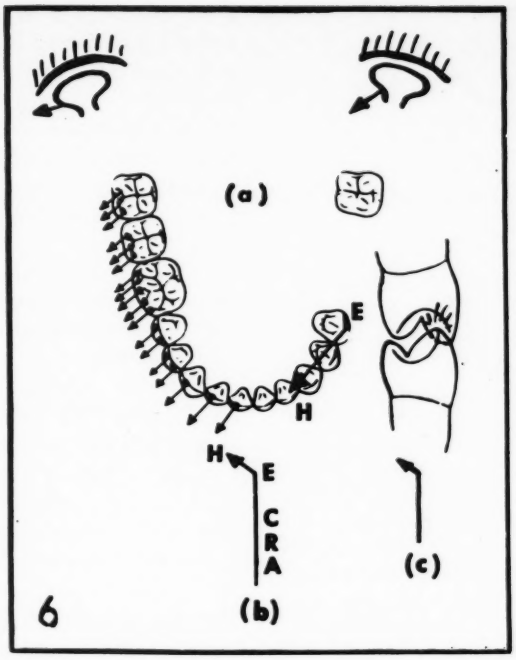
Diagonal Manifestation of Symptoms—When such trauma occurs, it is followed by (1) severe tooth pain, (2) periodontal symptoms, (3)



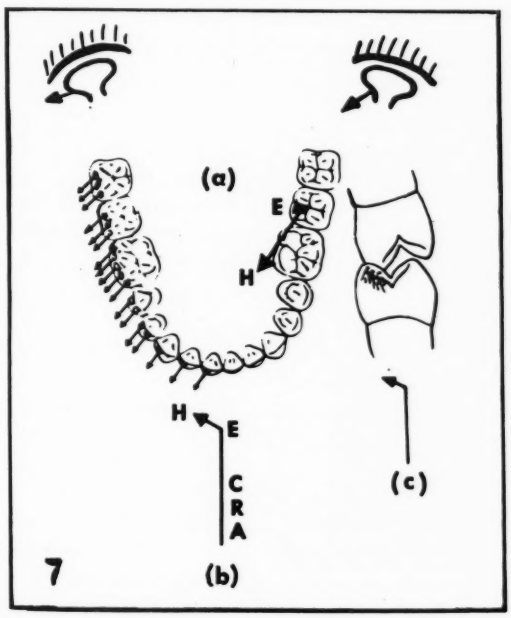
4.
Habitual convenience-relationship occlusion, as in Figure 3. Same protrusive shift of mandible, E'N; condyle has again been pulled forward from X to Y. However, surrounding alveolar bone of upper central is strong, resulting in gouging out of tooth at R.



5.
Class 1 pathologic mandibular protrusive occlusion, profile view. Interfering occlusal contact at E results in deflection of centric-relation arc, CRA, into habitual convenience-relationship, H, moving through protrusive medial path, EH. The hinge-axis, X, does not coincide with the intersection of the imaginary lines AB and CD because of the anteroinferior and medial shift of the left condyle. Note the unequal spacing of the joint gap, F.



6.
Diagram of protrusive medial mandibular shift. Figure 6a is an occlusal diagram, with the protrusive and medial mandibular shift indicated by the direction of the arrows. Figure 6b is a frontal view of the centric-relation arc, CRA, and the resultant medial mandibular shift from E to H. Figure 6c is a medial view of the interfering contact between the mesiolingual plane of the buccal cusp of the upper second bicuspid and the distobuccal plane of the buccal cusp of the lower second bicuspid.



7.
Diagram of protrusive medial mandibular shift. Figure 7a is an occlusal diagram; the shift is indicated, as in Figure 6a, by the direction of the arrows. The interfering contact occurs between the mesiolingual plane of the mesiolingual cusp of the upper second molar and the distobuccal plane of the mesiolingual cusp of the lower second molar, as illustrated in Figure 7c. Figure 7b is identical with that of Figure 6b.

tooth mobility, (4) bone breakdown, or (5) any combination of these conditions. *This is called the diagonal manifestation of symptoms since the original cause is an interfering occlusal contact diagonally opposite the actual site of the symptoms.*

Frequent Cause of Pain—When a patient complains of severe toothache and roentgenograms reveal no caries or bone pathology, the pain is almost invariably caused by an interfering occlusal contact diagonally opposite the symptoms. This condition is frequently encountered and the possibility of its occurrence should always be evaluated.

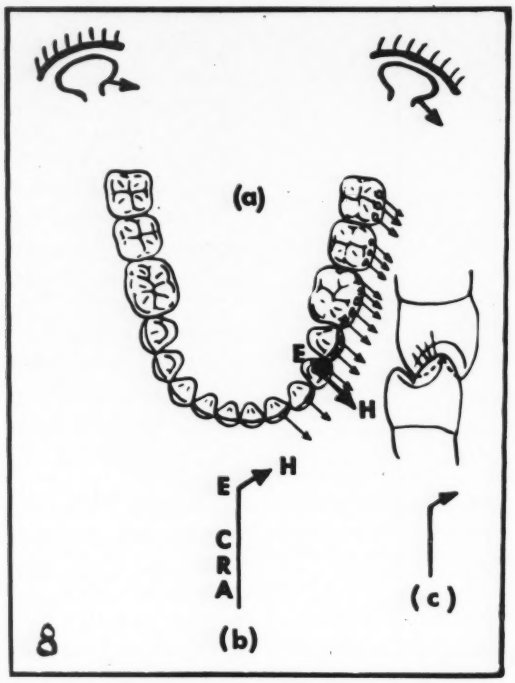
Disparate Shift of Condyles—Figure 6a also demonstrates the disparate shift of the condyles that may occur with this type of interfering occlusal contact. One condyle moves anteriorly and medially at the same time that the other condyle shifts posterolaterally, laterally, or anterolaterally, producing joint dysfunction.

Common Class 1 Interfering Contact Visualized—Figure 7a illustrates a protrusive medial mandibular shift, but in this case the interfering occlusal contact occurs between the mesiolingual plane of the mesiolingual cusp of the upper second molar and the distobuccal plane of the mesiolingual cusp of the lower second molar. Figure 7b is identical with Figure 6b. Figure 7c shows the actual interfering contact as it occurs. This kind of interfering contact is the commonest Class 1 pathologic mandibular protrusive medial relationship.

Protrusive Lateral Mandibular Shift Portrayed—Figure 8a, 8b, and 8c portray the protrusive lateral shift of the mandible, which is encountered in about 15 per cent of pathologic mandibular protrusive relationships.[4] The mesiobuccal plane of the lingual cusp of the upper first bicuspid, E of Figure 8a, contacts the distal plane of the buccal cusp of the lower first bicuspid.

Usual Location of Pain—In a protrusive lateral shift of the mandible, pain is usually experienced in the

[4]Wild, H., and Bay, R.: Lever Action of the Mandible, JADA **35**:596 (Oct.) 1947.



8.
Diagram of protrusive lateral mandibular shift. Again the shift is indicated by the direction of the arrows in Figure 8a. Figure 8c is a medial view of the interfering contact between the mesiobuccal plane of the lingual cusp of the upper first bicuspid, E of Figure 8a, and the distal plane of the buccal cusp of the lower first bicuspid. Figure 8b is the frontal view of the centric-relation arc, CRA, and the resultant lateral mandibular shift from E to H.

9.
Photograph of actual case, illustrating Figure 8. E represents interfering occlusal contact on the mesiobuccal plane of the lingual cusp of the upper first bicuspid.

tooth that is in interfering contact, and the direction of the mandibular shift takes place on the same side. Figure 8b is the frontal view of the centric-relation arc and the resultant lateral mandibular shift from E to H.

Actual Case Presented—Figure 9 is a photograph of such an actual case.

Summary of Class I Pathologic Mandibular Movements

There are three possible mandibular shifts: (1) protrusive, (2) medial, and (3) lateral. The actual mandibular shift is usually a combination of the protrusive and either the medial or the lateral.

Protrusive Medial Shift of Mandible—This occurs (1) when an interfering occlusal contact exists between the mesiolingual plane of the upper buccal cusp and the distobuccal plane of the lower buccal cusp, or (2) when an interfering occlusal contact exists between the mesiolingual plane of the upper lingual cusp and the distobuccal plane of the lower lingual cusp.

Protrusive Lateral Shift—An interfering occlusal contact between the mesiobuccal plane of the upper cusp and the distolingual plane of the lower buccal cusp results in a protrusive lateral shift of the mandible. The mandible will shift in a protrusive direction if the interfering occlusal contact takes place on the distal planes of the cusps of lower teeth.

It should be noted that if the mandible moves medially on the same side as the interfering occlusal contact the opposite side will move laterally, and vice versa.

(End of Part One)

654 *Madison Avenue*

Author's Note: The illustrations are from the book by Nathan Allen Shore, Occlusal Equilibration and Temporomandibular Joint Dysfunction, Philadelphia, J. B. Lippincott Company, 1959.

HINGE-AXES:

Arguments and Typical Examples: Proof

Part Two

HARRY L. PAGE, Valparaiso, Indiana

Correction: in the first installment (August 1960) the illustrations should be numbered Figures 1, 1A, 2 instead of Figures 1, 2, 3.

DIGEST

The second installment of this two-part article concludes the arguments for and against hinge-axes.

Errors in Research On Hinge-axis Function

It may be stated categorically that no articulator having an intercondylar axle suspended between two ball (point) rotation centers or having a built-in mechanical connection between its joints can accept casts accurately or duplicate jaw function precisely. This applies even to simple closure. If the articulator is one of the common type with the condyle balls on the upper frame and the slots on the lower, it is also unable to accept, maintain, or utilize a cranial plane (axis-orbital plane). If it has no intercondylar distance adjustment, it is without value as a duplicator of any type of lateral motion.

Inaccurate Performance Recorded—Unfortunately, these are the types of instruments to which recordings of hinge-axes are being transferred. Decisions are being made and the value of hinge-axes is being judged and published on the inaccurate performances of these articulators.

A Point Control Provided—It is common knowledge that all rotating bodies do so around axal centers and that the ball bearing was invented to provide a rotating body where the three axes (transverse, vertical, and sagittal) that control rotation in the three corresponding dimensions (sagittal, horizontal, and transverse) would have a common intersection in the exact center of the ball. In effect, this formed the equivalent of a common and single *point* control over rotation in any dimension.

Irregular Bodies Have no Point Control—In an irregular body such as a condyle, however, the three axes do not intersect (Fig. 1, Part 1); they bypass each other. Therefore, no common point control exists in the temporomandibular joint and, if jaw rotation is to be captured and duplicated perfectly in an articulator, these three nonintersecting line axes must be located and their individual relationships to the occlusals must be transferred intact to the instrument.

Conventional Ball-Point Control—In all conventional articulators, vertical movements caused by an inclination of an incisal plate create arcing in the sagittal plane (open and close), laterals create arcing in the horizontal plane (side to side), and the condyle slot on the nonworking side creates arcing in the transverse plane (rocking). All of these arcs, while occurring simultaneously, are controlled by the *working condyle ball.* This, like the ball bearing, resolves itself into a common single *point* control for all three dimensions.

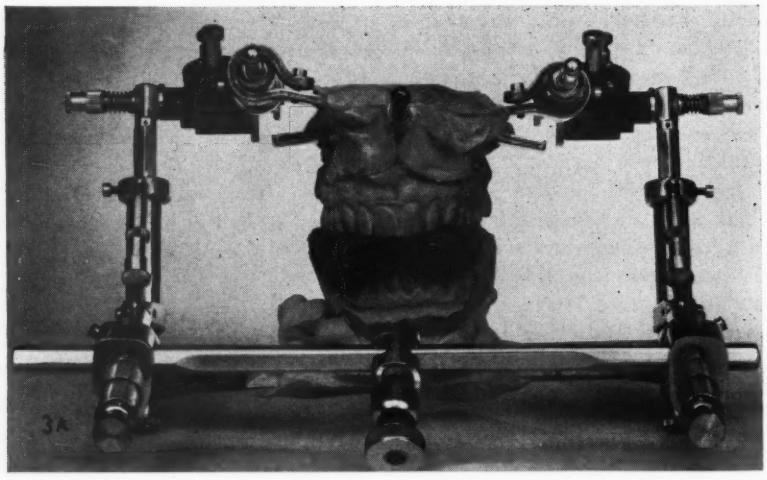
Condyle an Irregular Body—The axes of an irregular body never intersect to form such a point control. Therefore, no matter how careful the attempt to transfer the temporomandibular joint axes to an intercondylar-axis articulator, the result will not be accurate. To transfer and utilize them properly an entirely different joint design is required. Such a design is illustrated in Figures 2 to 5B inclusive.

Articulator Model Visualized

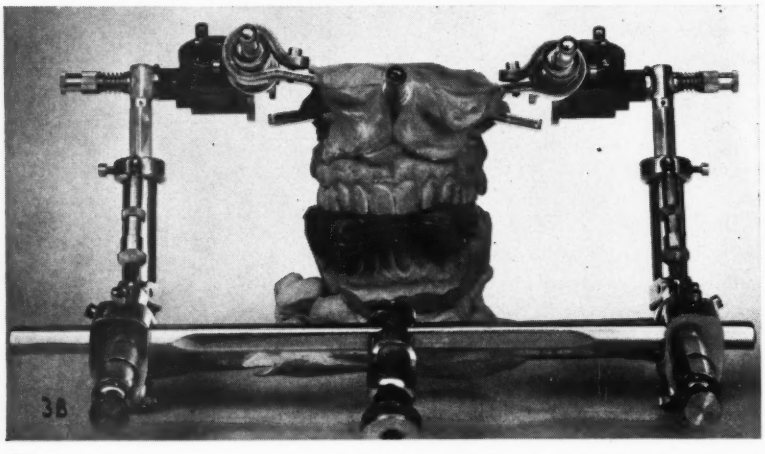
Figure 2 (shown in the first installment) shows an experimental model of the Transograph on which a dentulous case with almost perfect occlusion and articulation has been mounted. There is no mechanical connection between the right and left instrument joints. Just as the patient's temporomandibular joints are without connection except through the maxilla and the mandible body, so these articular joints are without connection except through the patient's casts.

Intrafossal Line-axes Control Provided—The joints are not constructed in the usual ball and socket form with a resulting single and erroneous point control; they are constructed with pin and sleeve and plate and slider-sleeve bearings that result in independent intrafossal line-axes control. How widely these line-axes bypass each other is graphically demonstrated by observing the relative positions of the vertical and the transverse axles. The tops of the pins that are axles carrying the vertical axes are seen to be located within the open circle formed by the flat ring on top of the joint mechanism. A casual glance shows the vertical axle in the left joint to be considerably out of line with the transverse axle that carries the transverse axis on that side. But it is the vertical axle in the right joint that shows how far

3.
Proof of transverse axes: The lower cast is mounted to the upper by means of a thin wax record.



3A.
Proof of transverse axes: A thick record is accepted by locked instrument.



3B.
Proof of transverse axes: A thick record produces no movement with the instrument unlocked.

from an intersection with the transverse axis a vertical axis can be. It indicates that even the schematic bypassing of the axes in Figure 1 (first installment) may not be too exaggerated. The accuracy of these line axes in combination must be proved.

Proof Repeated—As mentioned previously, proof of the transverse axes is ancient history. In order to show their correlation with nonintersecting vertical and sagittal axes, however, this proof will be repeated shortly.

Pins Used for Mounting Casts—Behind the vertical axis pin in each joint there is a second pin. This is used only while mounting the casts and forms a locking device to keep the arms of the Transograph's upper frame in correct alinement during that part of the operation. Once this purpose has been served, the pins are without purpose and may be removed entirely. Consequently, they will have no importance in this discussion.

Joint Construction Readily Understandable—Looking at any illustration from Figures 2 to 5B inclusive, it is obvious that there is a plate attached to each transverse axle and that this plate slides in a rectangular slider-sleeve open on three sides. This plate corresponds to the subject's condyle and, as in the head, is part of the lower mechanism while the slider-sleeve corresponds to the fossa and is part of the upper mechanism. The plate and the slider-sleeve together constitute the sagittal axis that controls arcing in the transverse plane (jaw rocking). At the same time, the plate and slider-sleeve construction provides means of reproducing the nonintersecting transverse and vertical axes that control arcing in the sagittal and horizontal planes; the forward and backward component of opening and closing and the side-to-side movement respectively.

Use of V-Shaped Sockets—Each plate has V-shaped sockets precisely fitted to tapering ends that are machined on the vertical axle pin and locking pin. Both pin shafts are threaded and screw down through bosses fixed to the upper side of the rectangular slider-sleeves. These bosses are centered exactly over the V-

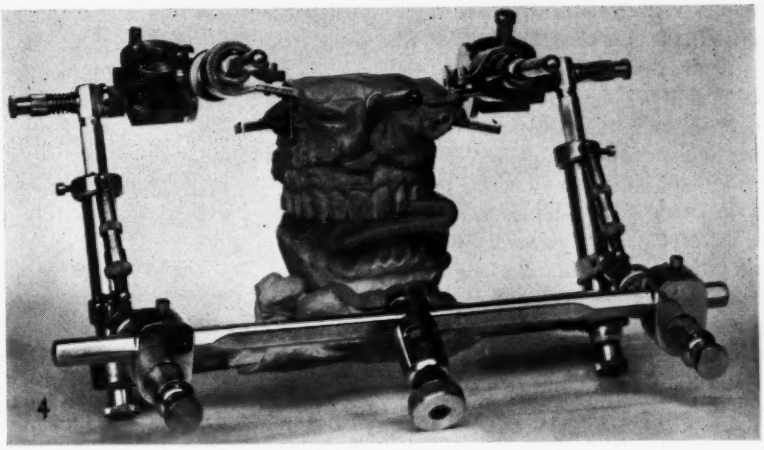
shaped sockets in the plates when the Transograph joints are centered. For convenience in judging accuracy, the ends of the plates and the rectangular slider-sleeves are machined so as to lie flush when the vertical axle pins are seated in the plate sockets.

Transograph Becomes Universal Joint—When a wax matrix made by the patient is fitted between the upper and lower casts mounted in the Transograph and the vertical axle pins are released from their plate sockets, the Transograph becomes a universal joint. The upper and lower frames will adapt themselves freely to the wax matrix.

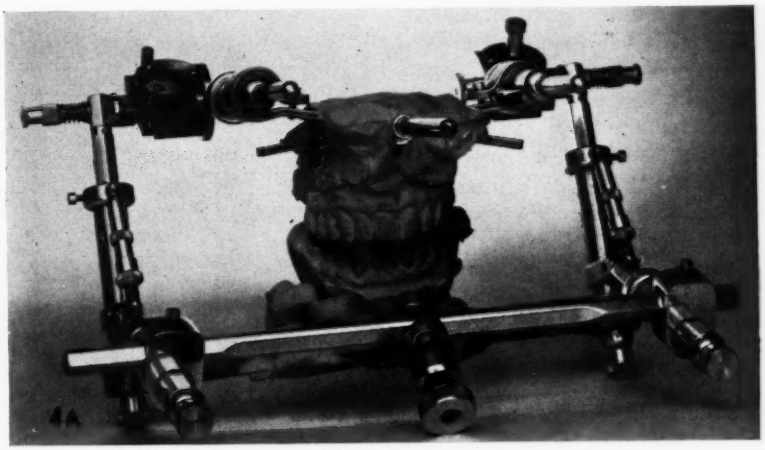
Error Easily Detected—When no plate movements take place as the pins are screwed in and out of the plate sockets, it is evident that the patient's jaw relationships and the Transograph cast relationships agree. If the tapered ends of the pins did not bottom perfectly in their sockets, the plate would be forced to move in the slider. Thus, the minutest error can be detected easily.

Proof of Like Relationship—When this immobility repeats itself with the casts fitting into wax matrices that create various occlusal separations, it proves that the instrument's transverse axes have the same relationship to the mounted casts that the head transverse axes have to the natural ridges at any amount of jaw separation. Control of three points on the arc of a circle spells control of the whole circle.

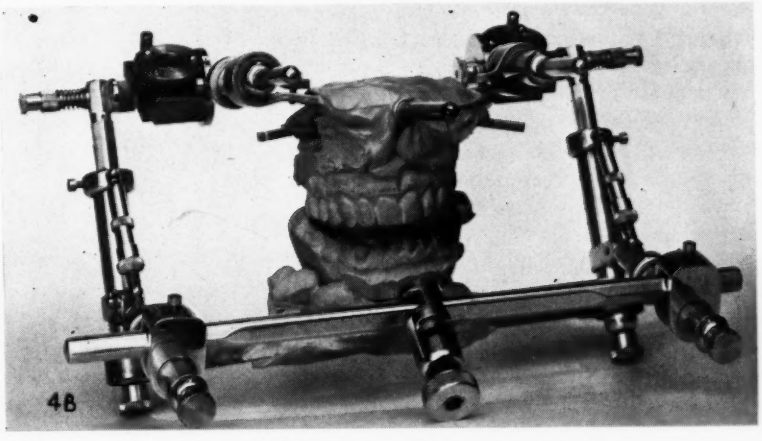
Proof that Instrument and Head Vertical Axes Correspond—To prove that the instrument and head *vertical* axes correspond, it is necessary to show that such axes will also accept various degrees of right and left jaw movements. When no change in plate and slider-sleeve relationship takes place as the vertical axle pins are released at these left and right positions of the jaws, such proof is provided. Finally, if each interposed wax matrix fits snugly between the fitted upper and lower occlusal duplications in the instrument it shows that the *saggital* axes in the Transograph have identical relationships with their counterparts in the head.



4.
Proof of vertical axes: The left vertical axis set to thick record and extreme left jaw position.



4A.
Proof of vertical axes: The left vertical axis accepts thin record with minimum left jaw position.



4B.
Proof of vertical axes: The record produces no movement with the instrument unlocked.

Essential Transograph Functions Visualized

Figure 3 shows a simple hinge relationship of the lower to an unchanged and, therefore, accurate upper registration and mounting. The relationship has been established with a thin wax matrix. If this mounting will accept accurately a thick wax matrix with deep tooth indentations, there can be little question but that the arc followed by the patient's closing stroke is under instrument control. At the same time, the transverse axes will be proved to be in existence and duplicated. Figure 3A shows such a thick, deeply indented wax matrix being accepted perfectly so far as the eye can determine with the instrument locked.

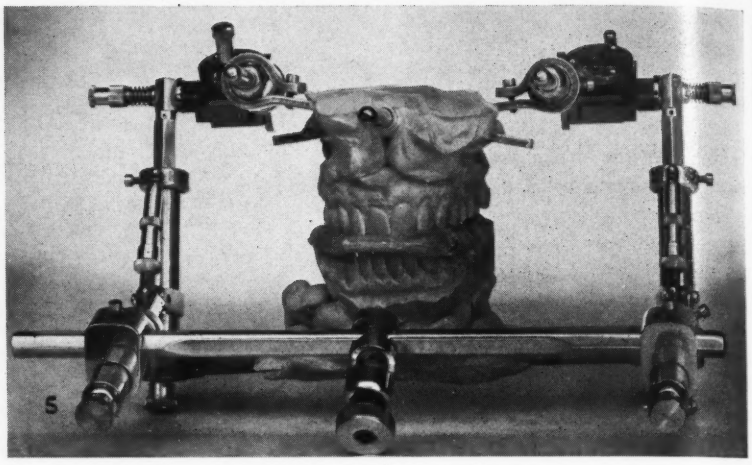
Instrument in Control of Subject's Closure Arc—In Figure 3B the vertical axle and locking pins have been alternately screwed in and out of their plate sockets without producing any plate movements. With the screws removed entirely, the observer can see that the ends of the plates and the rectangular sliders remain flush and unchanged. The Transograph is now proved to be in control of the subject's closure arc through all essential functional distances.

Figure 4—The left joint vertical axle pin that carries the vertical axis and controls jaw arcs to the left has been adjusted to an extreme sideward arc of the jaw while generously opened.

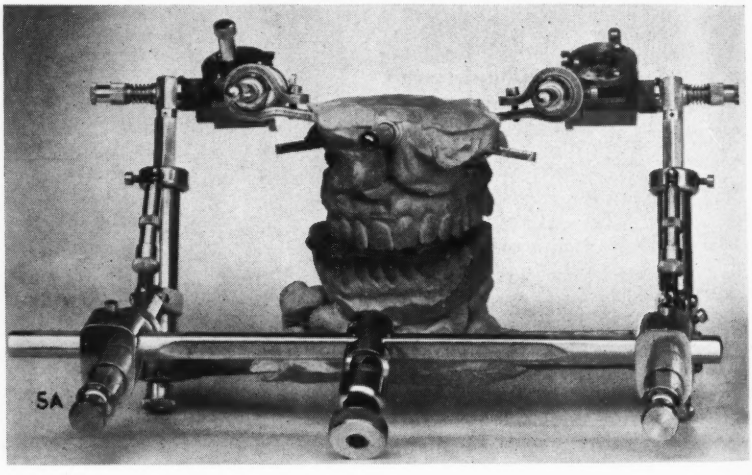
Figure 4*A*—The same vertical axis is shown apparently accepting a thin wax matrix that causes a small amount of occlusal separation and a normal arc to the left.

Figure 4B—Proof that this vertical axis corresponds to the head vertical axis of the left temporomandibular joint is provided in Figure 4B. Here the vertical axle pin has been removed from the plate socket with no change in the relative positions of the plate and the rectangular slider-sleeve.

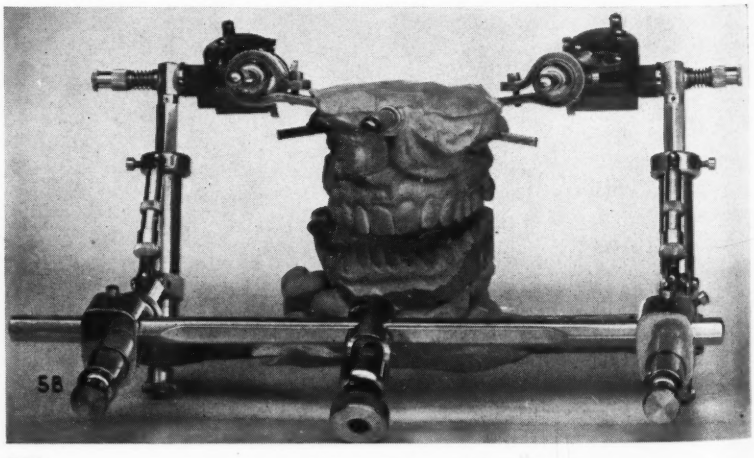
Figure 5—It is shown that an adjustment for the right vertical axis has been made. Again, the matrix used has a generous opening but this time a quite normal right jaw arc has been used.



5.
Proof of vertical axes: The right vertical axis set to thick record and moderate right jaw position.



5A.
Proof of vertical axes: The right vertical axis accepts a thin record with extreme right jaw position.



5B.
Proof of vertical axes: The record produces no movement with instrument unlocked.

Figure 5A—A much decreased opening with an increased arc to the right seems to be acceptable to the same vertical axis.

Figure 5B—Once more, proof is presented by showing that in Figure 5B no change in plate and slider relationship occurs as the vertical axis pin is removed.

There is no way to show in a photograph that all interposed wax matrixes fit snugly between the fitted upper and lower casts. That they do so must be accepted by the reader on faith although he has an alternative: he may do the experiment himself.

Erroneous Statement

Returning to Schallhorn,[7] the statement is made: "I would agree with Schuyler, Arstad, and others that the determining of the kinematic center or rotation is not nearly so important as the obtaining of proper centric and vertical relationship records."

Error Clarified—It has long since been demonstrated that the conclusion stated by Schallhorn's references is erroneous.[12] It has also been shown that the location and the utilization of centric relation in articulation is a myth,[13] and that attempts to use it are a common cause of mouth destruction. It is apparent that not only centric relation but the disputed transverse axes as well are worthless without the vertical and saggital axes. The latter axes, themselves, are worthless without a cranial reference plane while all of them are worthless without the individual patient's functional jaw pattern that lies within his envelope of motion.

Additional Proof Unnecessary—In short, the many contributory factors that must completely replace "centric and vertical relationship records" are entirely new and unknown quantities to everyone connected with the Schallhorn research project. Although ample scientific proof has long been available and often presented, it is really not necessary: a comparison of the expedients advocated and the daily results secured by those who try to use centric relation with the methods and results of those who properly apply hinge-axes with suitable equipment and corrective factors is sufficient.

Problem Presented

(1) If centric relation is more effective and important than hinge-axes and their requisites, why do conventional methods lay such stress upon exact maintenance of vertical dimension?

(2) Why is it hazardous to change vertical dimension on the conventional instrument?

(3) Schuyler[14] states, "At no time, regardless of the type of face-bow used is it safe to make centric relation records at an opening greater than the rest position of the mandible."

(4) Why do the majority of centric relation advocates insist upon some form of flat, unnatural occlusals because natural cusps always result in trauma and failure?

(5) Why do centric relation proponents agree that postoperative mouth adjustments are inevitable despite perfect transfer of centric relation to the articulator and despite the aid of careful adjustment of cusps to "lateral excursions" in the instrument?

(6) Could even 15 per cent freedom from these tedious and often futile "corrections" be claimed?

Problem Solved

(1) In complete contrast, using hinge-axes, a correctly designed articulator such as the Transograph readily and precisely accepts interocclusal records that create deep cuspal indentations at a jaw separation far beyond the slight opening dictated by the "rest position of the mandible."

(2) Opening or closing the vertical dimension on the Transograph is not only perfectly feasible mechanically but is a consistent help to esthetics and muscle tolerance.

(3) Patients are comfortable and delighted with the efficiency of normal, steep cusps.

(4) There is no hesitation in claiming better than 85 per cent freedom from postoperative mouth adjustments with the use of the Transograph. As stated by Rappaport, "There have been fewer mouth adjustments in over one hundred Transographic cases than we used to have with a single case."[15]

Summary

It has been demonstrated that there are three hinge-axes (transverse, vertical, and sagittal) in each temporomandibular joint; that they control jaw closure within its terminal functional orbit; and that it is readily feasible to locate and transfer the hinge-axes to a suitable articulator.

104 *Garfield Avenue*

[7]op. cit.
[8]Arstad, Thor: The Capsular Ligaments of Temporomandibular Joint Movements, Oslo, 1954.
[9]Schuyler, Clyde: Factors of Occlusion Applicable to Restorative Dentistry, J. Pros. Dent. **2**:633 (July) 1952.
[10]Posselt, Ulf, and Borch, Olle: Hinge-Axis Registration: Experiments on the Articulator, Odontologisk Revy 7, 1956.
[11]McCollum, Beverly B.: Fundamentals Involved in Prescribing Restorative Dental Remedies, Reprint, 1941 from Dental Items of Interest, June 1939-February 1940 Inclusive, page 11.
[12]Page, Harry L.: Centric and Hinge-Axis, DENTAL DIGEST **57**:115-117 (March) 1951.
[13]Rader, Albert F: Centric Relation is Obsolete, J. Pros. Dent. **5**:333-337 (May) 1955.
[14]Schuyler, Clyde H.: Factors of Occlusion Applicable to Restorative Dentistry, J. Pros. Dent. **3**:772-782 (July) 1953.
[15]Rappaport, Bernard B.: Personal communication, 1956.

The Technique of GINGIVECTOMY

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DIGEST

The elimination of the periodontal pocket utilizing surgical procedures is a much more spectacular and rapid technique than the conservative method of curettement. Surgical treatment alone, however, will not eliminate the inflammatory process from the gingival tissue permanently. It is only one part of the overall treatment plan.[1] This article describes the step-by-step surgery employed and illustrates the use of splints as an esthetic supplement.

Indications for Employing Gingivectomy

Gingivectomy is indicated in the following situations:[2]

1. Deep periodontal pockets
2. Bifurcation and trifurcation involvements
3. Periodontal abscesses
4. Pericoronal flaps
5. Gingival enlargement

Preparatory Treatment

Possibility of postoperative infection[3] is reduced if conservative treatment is completed before surgery is undertaken. Gingivectomy leaves no doubt regarding the complete removal of all calculary deposits. The persistence of hidden calculary deposits which prevents the restoration of gingival health is reduced to a minimum.[2] If there is a possibility that a program of cleanliness can be attained successfully without gingival resection, this method should be tried first. If it fails, the cleansing of the pocket is excellent preparatory treatment to gingival surgery.[4]

Technical Steps Illustrated

In Figure I the patient is shown before surgery was undertaken. Note the detached interdental papilla and the edematous tissue. Conservative therapy was unsuccessful in this case and the decision was made to undertake full upper and lower arch gingivectomy.

Premedication—Nembutal®, ¾ to 1½ grains was given, 30 minutes prior to surgery.

Armamentarium—As shown in Figure 2, the following materials will be needed:

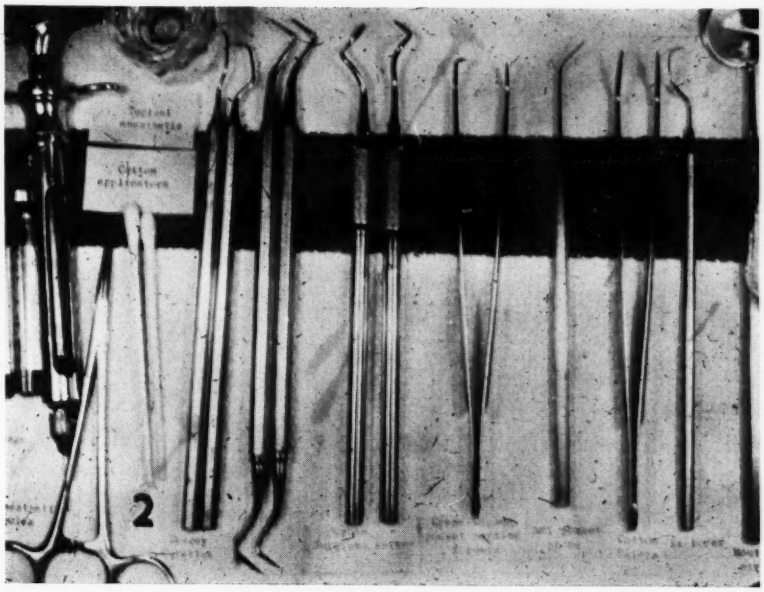
(1) Syringe
(2) Short needle, 28 gauge
(3) Tubes of local anesthetic
(4) Hemostat
(5) Cotton-tipped applicators
(6) Dappen dish with topical anesthetic
(7) Dappen dish with Epinephrine (1:1000)
(8) Gracey Curettes (pair)
(9) Orban Surgical Knives (pair) or Sanders Knives
(10) Crane-Kaplan Pocket-Marking Forceps (Right and Left)
(11) Pocket probe calibrated in millimeters
(12) Mirror, explorer, and cotton pliers
(13) Mixing slab and spatula
(14) Surgical pack (Orban's formula)

Application of Anesthetic—The topical anesthetic is applied to the gingival tissues and is followed by infiltration of the local anesthetic (Fig. 3). Start injecting posteriorly and note the blanching of the tissues spreading out from the point of insertion of the needle as the solution is

[1]Gilson, C. M.: Surgical Treatment of Periodontal Disease, JADA **44**:733-741 (June) 1952.
[2]Glickman, Irving: Clinical Periodontology, Philadelphia, W. B Saunders and Company, 1953.
[3]Coolidge, E D., and Hine, M. K.: Periodontia—Clinical Pathology and Treatment of the Periodontal Tissues. Philadelphia, Lea & Febiger, 1951.
[4]Miller, S. C.: Textbook of Periodontia, ed. 3, Philadelphia, The Blakiston Company, 1950.

1.
View of clinical case before treatment.

2.
Armamentarium.



injected. The next point of insertion should be within the limit of the previous blanching.

Measurement of Pockets—Crane-Kaplan pocket-marking forceps are used to determine the exact depth of the pocket. The following steps may be taken:

1. The blunt end of the forcep is inserted into the pocket and probed to the depth of the pocket.

2. The forcep is squeezed and the outer arm of the forcep with its sharp point will make a mark on the outer gingival surface indicating the pocket depth at this point (Fig. 4).

Procedure for Strip Excision

The markings made with the pocket-marking forceps, or by using a millimeter probe and spotting the outside with a scalpel blade, are connected by using the surgical knife (Fig. 5).

For continuous strip excision (Fig. 6) the following steps are completed:

3.
Infiltration anesthesia.

4.
Probing and marking of the pockets.

5.
Line of incision following pocket markings.

6.
Excising the tissue by continuous strip.

1. Cut from the buccal of one tooth to buccal of the next tooth (or lingual), removing interdental tissue from one area at a time.

2. The buccal surface is removed first and the lingual next. After continuous strip excision is completed, the excised tissue can be examined as shown in Figure 7. In Figure 8 the

7.
Tissue examination after excision.

8.
Clinical case immediately after excision.

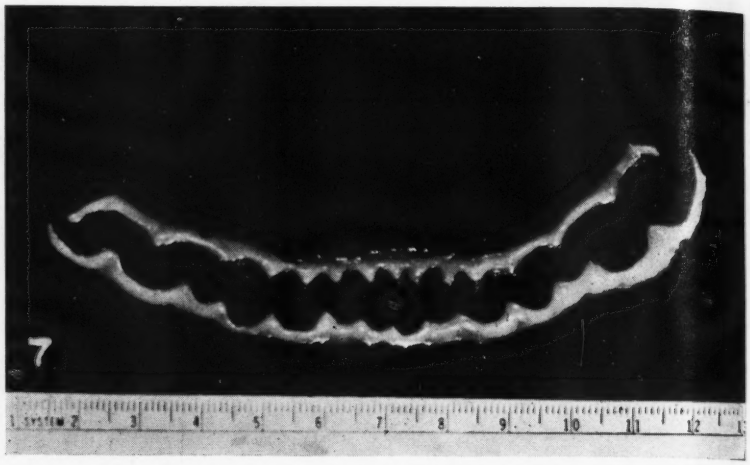
9.
Deep scaling in progress.

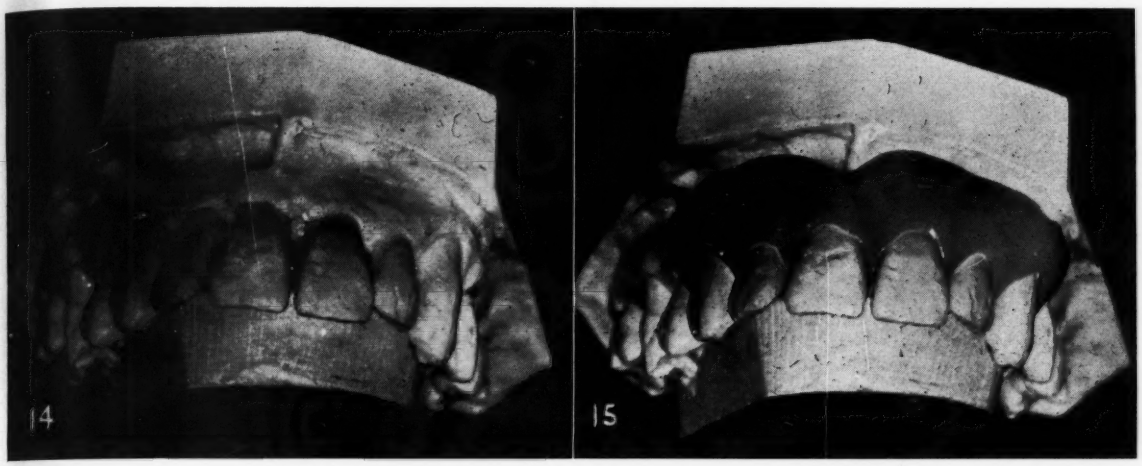
10.
Interproximal areas packed to obtain hemostasis.

11.
Clinical case after hemorrhage control.

12.
Surgical pack in place.

13.
Clinical case—3 weeks postoperatively.





14.
Case where labial acrylic splint is indicated to restore excised tissue.
15.
Gingivectomy splint core model.

case is shown immediately upon completing the tissue removal.

3. Deep scaling is done using the Gracey curettes. All tissue remnants are removed at this time and calculary deposits are removed from the tooth surfaces (Fig. 9).

4. Upon completion of the scaling, cotton pellets are soaked in epinephrine and a pellet is inserted into each interproximal area to obtain hemostasis (Fig. 10). The case is shown immediately after the removal of the pellets (Fig. 11). Hemostasis has been obtained.

5. When hemorrhage control has been obtained, a surgical pack is placed both buccally and lingually (Fig. 12). With the pack in place, the patient is dismissed to return in approximately 5 days for a pack change.

Final Steps Visualized

1. In Figure 13 a full lower arch gingivectomy is shown three weeks postoperatively. Note the gingival tone and color and the beginning of the recontouring of the interdental papillæ.

2. If an upper arch gingivectomy has been performed and esthetics is an important consideration, a small acrylic splint may be constructed after postoperative healing which simulates the excised tissue.

3. Figure 14 shows a gingivectomy splint core model prior to fabricating an acrylic splint. Illustration 15 shows an acrylic splint completed and in place on the model.

Summary

A step-by-step procedure has been presented for the surgical approach to the periodontal pocket. It has been referred to as the "ultimate" or "radical" approach to the problem because it secures the complete elimination of the pocket and re-establishment of a shallow crevice. It removes all of the soft tissue forming the wall of the pocket down to the epithelial attachment.[1]

Gingivectomy is only one phase, however, in the treatment of periodontal disease. As stated earlier, there are the subsequent phases of re-establishment of function and tissue resistance and the institution of procedures for the maintenance of health and tissue resistance.

No one procedure will eliminate periodontal disease. A long range concept is necessary and a thorough and well-balanced combination of available techniques.

First National Bank Building

Headache from Parodontitis

Study Undertaken

In a series of 326 patients various forms of headache were found to be associated with marginal parodontitis or gingivitis although many of the patients had been unaware of this association. The presence of only 29 men in this series points to the greater readiness of women to seek dental aid for parodontal disease.

Experiment Executed

The correlation with headache was facilitated by blocking suspected areas with local anesthesia and noting the effect of this test on the headache. The execution of this test requires skill and knowledge of its limitations and sources of error. A negative test result cannot be accepted as such until all the possibly peccant areas have been anesthetized and evaluated in turn.

Results—In 271 cases (83 per cent) the patients were rendered symptom-free, in 30 (9 per cent) they were relieved, and in 25 (8 per cent) they were unaffected by treatment of their parodontitis. By vasodilator tests with nitroglycerin and histamine it was found that headaches of parodontal origin were mainly of vasodilator character, while a few might be of muscular origin.

Adapted from Foreign Letters, *Journal of the American Medical Association* **171**:331 (Sept. 19) 1959.

SECOND STAGE SURGERY:

Insertion of the IMPLANT SUBSTRUCTURE

and Subsequent Prosthodontics

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DIGEST

Although the implant technique has been regarded with some skepticism by the dental profession, the authors of this article suggest that after ten years of successful application this highly specialized procedure has proved its usefulness and is to be accepted as a valuable operative adjunct. This article presents a step-by-step description of the method employed to complete the second stage in implant surgery, insertion of the substructure. This measure does not entail quite the degree of responsibility as that of the initial surgery but nevertheless requires extreme accuracy and skill and subsequent observation of the patient.

Introductory Considerations

Implantodontia is a method to restore masticatory efficiency for the hopeless edentulous patient and to restore esthetics, comfort, and oral health. To achieve these results the objective of the implant denture is to preserve the edentulous ridges for the longest period of time possible. With intelligent planning and skillful application of technique this can definitely be accomplished.

Extreme Skill Required—In the hands of an operator inexperienced in implant prosthesis failure invariably occurs. For this reason many members of the dental profession have been skeptical of this highly specialized field of dentistry and are eager to criticize the technique.

Success Demonstrated—After 10 years of success, however, implant dentures can no longer be considered a fad or novelty. They are a definite adjunct to good prosthetic dentistry and have demonstrated their usefulness is rehabilitating the hopeless edentulous patient.

Balanced Occlusion a Necessity—Balanced occlusion is not only a prime factor in all types of fixed and removable prostheses, it is of paramount importance in implantodontics. When the patient must resort to an implant denture he has reached the final stage in treatment, the point of no return.

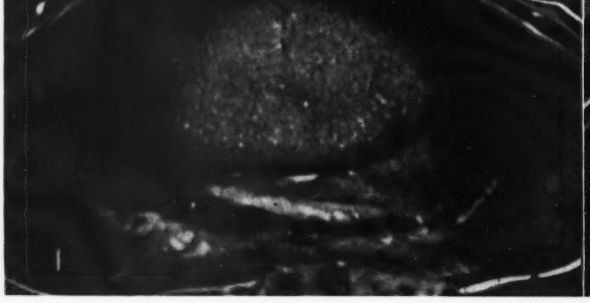
1.
The operation for the insertion of the subimplant usually is done from 4 to 6 weeks after the direct bone impression has been obtained. An incision is made on the crest of the ridge from retromolar pad to retromolar pad.

2.
The mucoperiosteum is elevated and retracted to permit the insertion of the subimplant.

Technical Steps

Insertion of Subimplant—The second operation, that of the insertion of the subimplant usually takes place from 4 to 6 weeks after the direct bone impression has been obtained. As shown in Figure 1, an incision is made on the crest of the ridge from retromolar pad to retromolar pad.

Bone Cleared of Fibrous Tissue—The mucoperiosteum is elevated and retracted sufficiently to permit the insertion of the subimplant (Fig. 2). Any grooves or markings previously



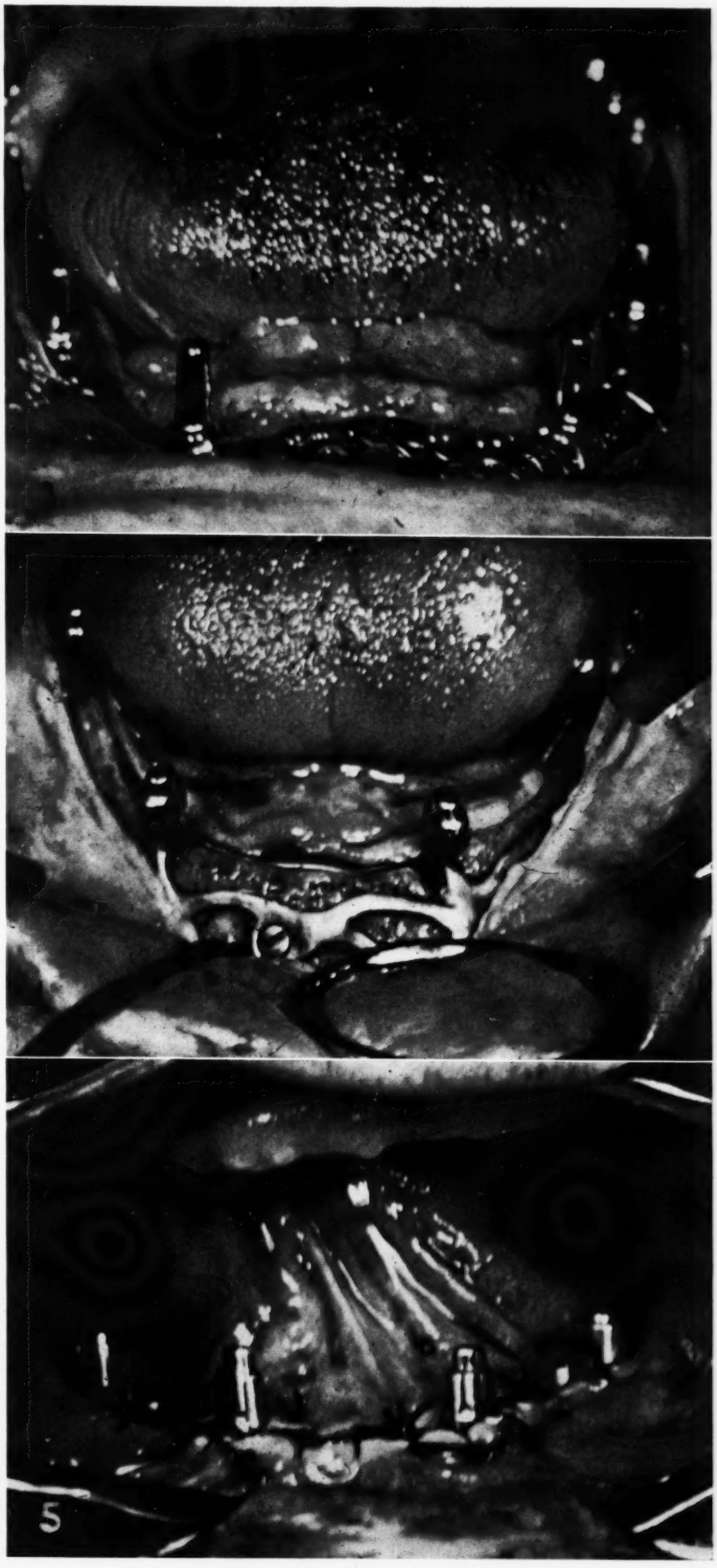
made in the bone to be used as an aid or guide in seating the implant must be thoroughly cleaned of the fibrous tissue that has filled in these markings. Failure to do so may prevent proper seating of the implant substructure.

Adaptation to Bone Examined—The casting is placed upon the mandible and the prosthodontist carefully checks the fit of the implant for bone adaptation and suggests any slight bone alteration considered necessary. If the bone impression was accurate and the laboratory procedure carried out properly the fit of the implant will be that of a precision casting (Fig. 3).

Screws May be Tried—The question of screws is optional. Their purpose is to prevent movement of the implant and to hold it in proper position for 3 or 4 weeks until granulation has taken place (Fig. 4).

Placing the Screws: The screws are 5 or 7 millimeters in length. One is placed on each side to the distobuccal of the molar abutments. Care must be taken to avoid entering the mandibular canal. The third screw is placed anteriorly between the cuspid abutments on the labial surface.

Screws Preferred in Some Cases: Extreme care must be taken in placing



3.
The casting is placed on the mandible. The fit of the implant for bone adaptation is carefully noted. If the bone impression was accurate and the laboratory procedure correct, the fit will be like that of a precision casting. One of the early designs is shown. There is too much metal over the ridge. Present-day design has little metal crossing the ridge as seen in Figure 4. This case is still in excellent condition.

4.
The only purpose of the screws is to prevent movement of the implant and to hold it in position for 3 to 4 weeks until granulation has taken place. The use of screws is not mandatory although in cases of extreme atrophy they are usually desirable.

5.
The type of sutures used after the insertion of the implant is important to avoid breakdown of the suture line and to prevent future exposure of the implant substructure.

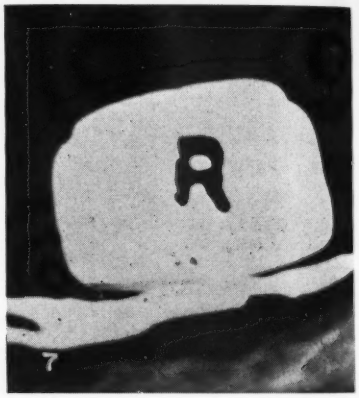
6A.
The temporary superstructure is inserted. The superstructure is cleared sufficiently to allow for swelling. The teeth are ground to occlude with the opposing teeth or with the old denture. Subsequently the case is closely observed in order to make necessary adjustments that may be required by excessive swelling or occlusal disharmony.

6B.
The temporary appliance is refitted by the use of a self-curing denture acrylic and becomes a fairly well fitting superstructure.

the screws properly and evenly and gradually bringing them into position. Failure to exercise the utmost caution might slightly dislodge the implant from its correct position. This holds true especially in the completely ridgeless or saucer-shaped cases. The use of screws is preferred in extremely atrophied cases.

Suturing—The reflected tissues, as shown in Figure 5, are sutured after the insertion of the implant. The type of sutures used is of major importance to avoid breakdown of the suture line and to prevent future exposure of the implant structure. Interrupted vertical mattress sutures are placed deeply mesially and distally to the abutments and continuous or interrupted sutures are then placed as required.

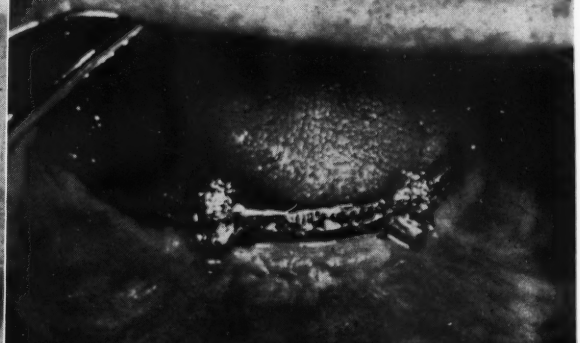
Temporary Superstructure Inserted (*Figure 6A*)—The superstructure is cleared sufficiently to allow for swell-

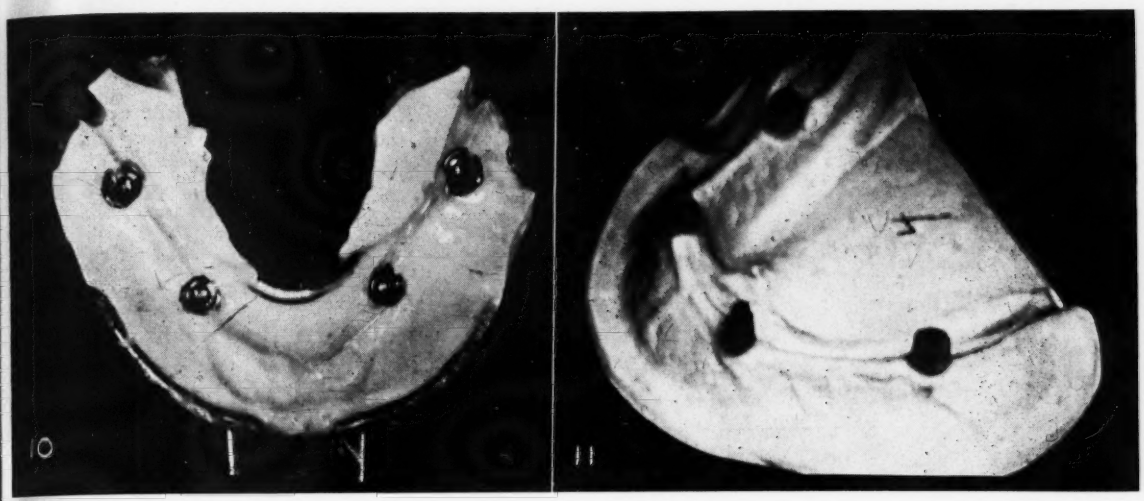


7.
The implant does not rest on bone. A fibrous tissue, the subimplant membrane, rapidly forms between the bone and implant. This subimplant membrane has many characteristics of the periodontal membrane and is able to withstand the stresses of mastication. Observation of implants 8 or 9 years old suggest that the membrane acts as a shock absorber and aids in preventing rapid bone resorption.

8.
Six weeks after the insertion of the implant the tissue has usually healed sufficiently to place the permanent superstructure.

9.
The metal framework of the superstructure is placed on the implant and again checked for fit.





ing. The teeth are ground to occlude with the opposing teeth or with the old denture. The prosthodontist and the oral surgeon must observe the case closely to make any necessary adjustments that are required by excessive swelling or occlusal disharmony.

Close Observation of Patient: Close observation of the patient for 3 or 4 weeks is of the utmost importance to make the necessary adjustments to prevent tissue breakdown and mucoperiosteal exposure.

Instruction to Patient: The patient is given explicit instructions in oral hygiene and is cautioned not to use the temporary superstructure for chewing until the pain and swelling have subsided. The superstructure acts at all times as an aid in stimulating healing and granulation.

Appliance Refitted—The temporary appliance is refitted by the use of a self-curing denture acrylic and becomes a fairly well fitting superstructure (Fig. 6B).

Formation of Membrane—Contrary to general opinion the implant does not rest on the bone. A fibrous tissue, the subimplant membrane, quickly forms between the bone and implant (Fig. 7). This subimplant membrane has many characteristics of the periodontal membrane and is able to withstand the stresses of mastication. It is the author's opinion from observing cases of 8- or 9-year-old implants that the membrane acts as a shock absorber and also aids in preventing rapid bone resorption that is so often present in patients wearing conventional dentures.

10.
An alginate impression is made with the superstructure in place and an accurate impression of the mucosa is obtained from the ridge beneath the connecting bars.

11.
A thin mix of self-curing denture resin is vibrated into the abutments and the remainder of the impression is poured in cast stone. The resin abutments prevent breakage in removing the superstructure from the cast and also aid in accurately reseating the case on the model.

Permanent Superstructure Placed—Usually 6 weeks after the insertion of the implant the tissue has healed sufficiently to place the permanent superstructure (Fig. 8).

Steps for Placing Superstructure

Step One—The metal framework of the superstructure is placed upon the implant and again checked for fit (Fig. 9).

Step Two—An alginate impression is made with the superstructure in place and picked up in the impression and an accurate impression of the mucosa is obtained from the ridge beneath the connecting bars (Fig. 10).

Step Three—A thin mix of self-curing denture resin is vibrated into the abutments and the remainder of the impression is poured in cast stone (Fig. 11). The resin abutments prevent breakage in removing the superstructure from the cast and also aid in accurately seating the case on the model.

Step Four—A wax rim is made on the superstructure frame as shown in Figure 12. The upper try-in is inserted and the occlusal rim of the lower is altered to establish the correct vertical dimension and exact centric relation.

Step Five—The case is mounted on the articulator in its correct vertical and centric relation. The lower teeth are then set and articulated to the upper and tried in for centric, vertical, and esthetics (Fig. 12A).

Step Six—In setting the teeth, perfect functional balance must be achieved in all functional movements without excessive grinding of the occlusal surfaces in the completed case. In implantodontics it is of the utmost importance to have the lower posterior teeth set directly on the ridge (Fig. 12B).

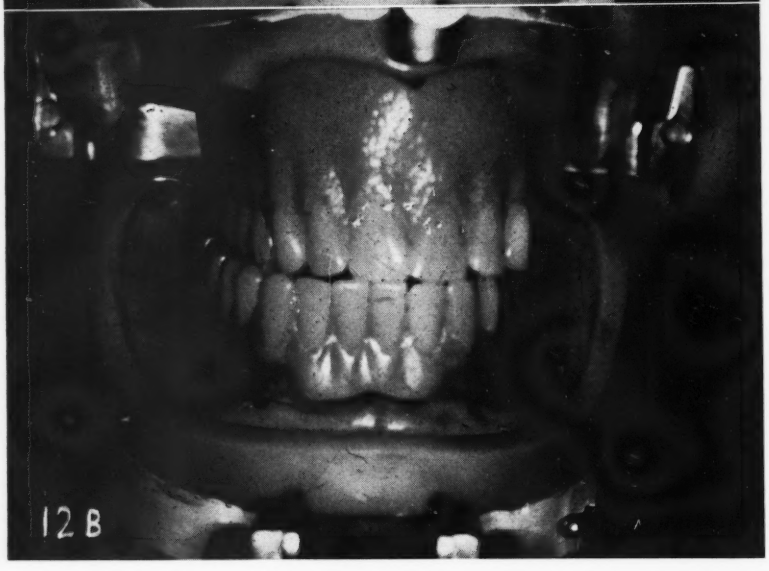
Final Steps—1. When the desired esthetics, centric, and vertical have been obtained the case is completed.

2. The finished case is inserted and the patient is instructed to close the teeth tightly in centric relation for a minute and to repeat the maneuver every 5 or 6 minutes for an hour. This allows the upper denture to settle.

2. The occlusion is corrected by spot grinding to eliminate cuspal disharmony in all functional movements such as right and left lateral excursions, anterior, and protrusive movements until no audible interference is detectable.

12.
A wax rim is made on the superstructure frame. The upper try-in is inserted and the occlusal rim of the lower is altered to establish the correct vertical dimension and exact centric relation.

12A.
The case is mounted on the articulator in its correct vertical and centric relation. The lower teeth are set and articulated to the upper and tried in for centric, vertical, and esthetic appearance.



12B.
In setting the teeth perfect balance must be achieved in all functional movements without excessive grinding of the occlusal surfaces in the completed case. In implantodontics it is of the utmost importance to have the lower posterior teeth set directly on the ridge.

13.
This illustration shows the healthy condition of one of the oldest cases completed by the authors. It has been in use about 9 years.

14.
A patient extremely gratified with her implant after having 14 full upper and lower conventional dentures that she could not wear.

15.
Correct centric and vertical dimension.

16.
Protrusive or end-to-end bite. All teeth are in contact.

17.
Left lateral excursion, all anteriors and posteriors are in contact.

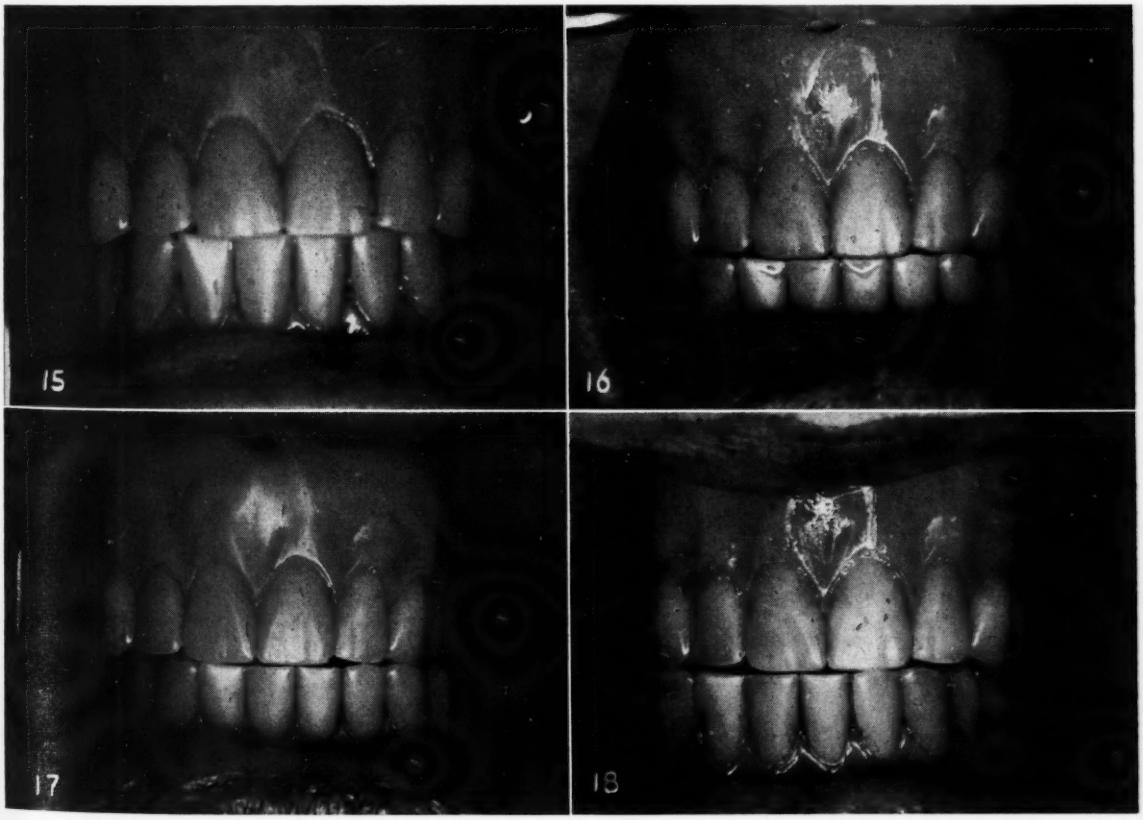
18.
Right lateral excursion, all anteriors and posteriors in contact.

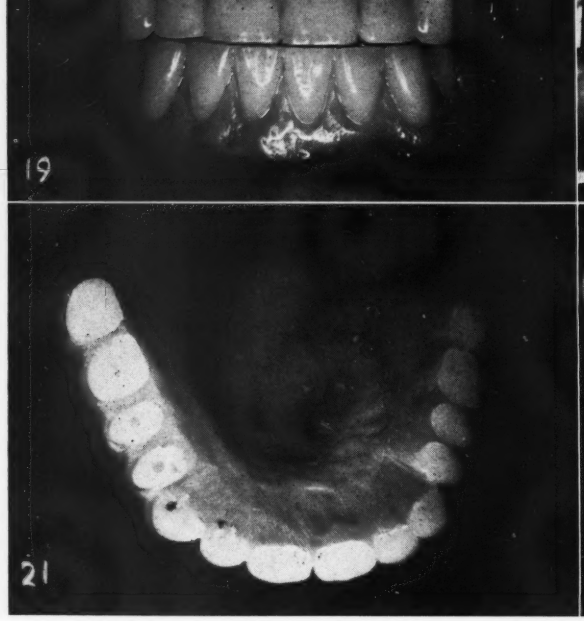
4. The occlusal surfaces should be highly polished.

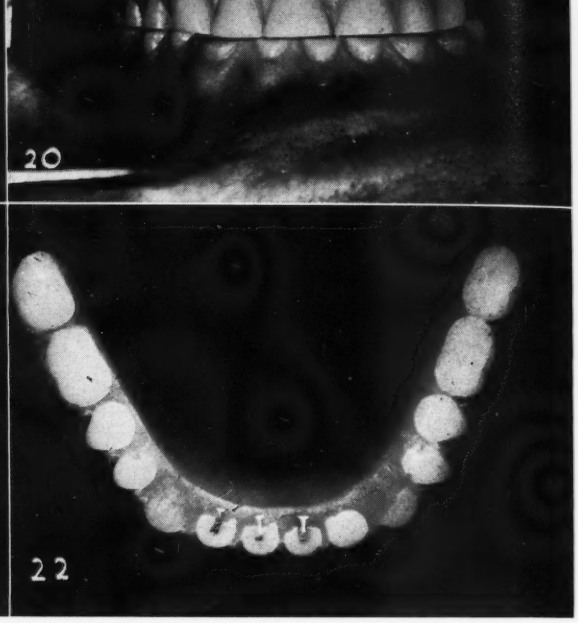
5. All balancing and equilibrating are done in the mouth using the mandible as an articulator. The author has used this method to achieve perfect functional balance.

Postoperative Measures

1. After completing the case intra-







19.
An extreme case of bruxism is shown in the following pictures. The implant illustrated was inserted in August 1953. The superstructure and the conventional upper denture have been remade yearly for six years due to the fact that the patient has completely worn down the porcelain teeth by excessive grinding. The patient removes the upper denture at night. All grinding takes place during the day. The correct centric and vertical relations are shown.

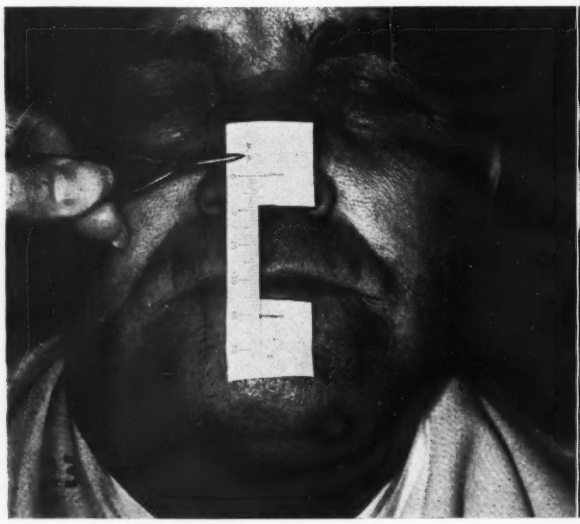
20.
After 9 to 11 months the porcelain teeth on both the upper and lower have completely disappeared and the patient is down to the pink base material on the dentures. All types of treatment have been tried to break the habit of bruxism in this patient but without success.

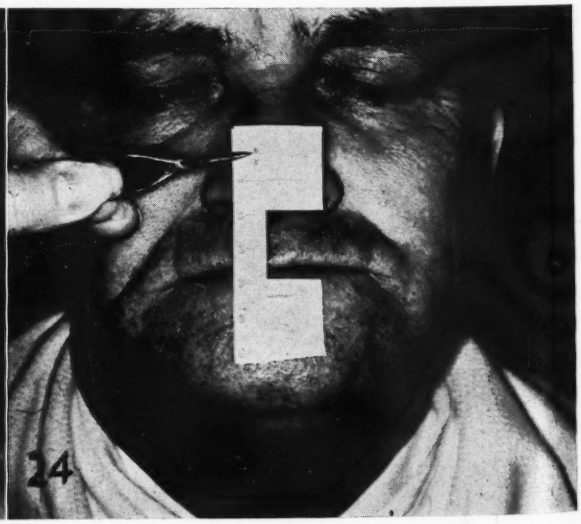
21.
Occlusal view of the upper worn down into the pink base material.

22.
Occlusal view of the lower worn down into the pink base material.

23.
Showing correct vertical and centric when dentures were first inserted.

24.
Loss of approximately 8 millimeters of vertical after 9 months.





oral and extraoral x-rays are taken every 6 months for at least two years to detect possible degenerative bone changes.

2. Patients are instructed again in proper brushing of the abutments, in oral hygiene, and tissue massage.

3. The abutments are scaled and cleaned every 4 to 6 months depending on the amount of calculus accumulated.

4. After two years x-ray examinations are made annually.

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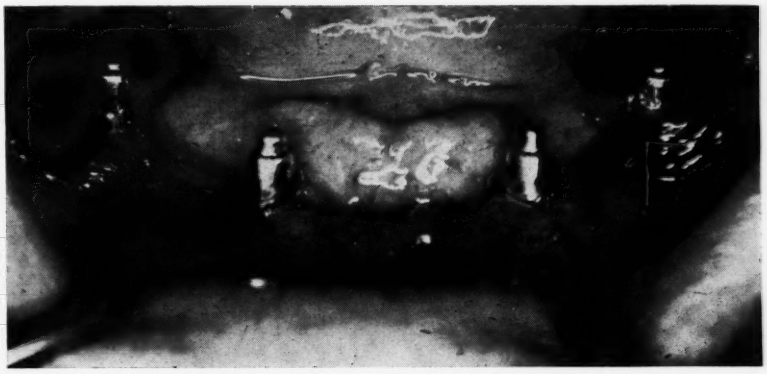
701 *Metropolitan Building* (R.L.C.)



25. ***Healthy condition of tissue after more than 6 years of extreme trauma caused by bruxism.***

Suppression of Pain by Sound

Successful in Dental Operations

A procedure involving music and noise has been effective in suppressing pain in 5000 dental operations. The music promotes relaxation, and the noise (the main agent) directly suppresses pain.

Method Employed

The procedure usually followed in inducing the analgesic condition involves the use of music and noise:

1. The patient wears headphones and controls the stimuli through a small control box in his hand.

2. Before the operation, and until a potentially painful procedure has to be employed, the patient listens to stereophonic music.

3. As soon as he anticipates pain or feels incipient pain, he turns up the intensity of the noise stimulus.

4. It is random noise with a spectrum shaped by low-pass filters to provide a compromise between analgesic effectiveness and pleasantness of quality.

5. The main function of the music is to relax the patient. For most patients the noise is the main agent, the one that drowns out the pain.

Several Factors Operate Simultaneously

1. The noise appears, in introspection, directly to suppress the pain caused by the dental operation.

2. During cavity preparation, the noise also masks the sound of the dental drill, thereby removing a source of conditioned anxiety.

3. The music promotes relaxation, and the noise, which sounds like a waterfall, also has a relaxing effect.

4. When both music and noise are presented, the music can be followed only through concentration; it diverts attention from the dental operation.

5. Patients enjoy having control over the massive acoustic stimulation; in their earlier experiences in dental offices, control of the situation had seemed entirely out of their hands.

6. The procedure provides a needed channel of communication between the patient and the dentist; the dentist can judge the patient's state of anxiety or discomfort by noting whether the patient is using music or noise, and by observing the intensity level of the signal.

7. All the factors appear to be important, different ones predominating in different situations and for different patients. Suggestion also plays a role, the significance of which has been difficult to estimate.

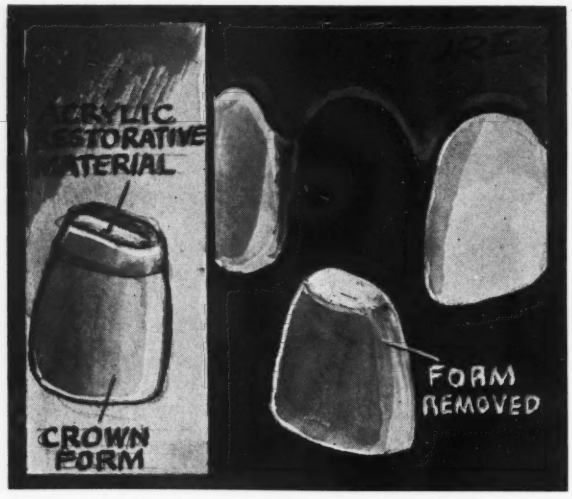
Explanatory Hypothesis

In thinking toward an explanation, it is noted that parts of the auditory and pain systems come together in several regions of the reticular formation and lower thalamus. The interactions between the two systems are largely inhibitory.

Acoustic Stimulation Decreases Pain—Both the direct suppressive effect and the effects mediated through relaxation, reduction of anxiety, and diversion of attention, can be explained by assuming that acoustic stimulation decreases the "gain" of pain relays upon which branches of the auditory system impinge.

Characteristics of Audio-Analgesia Reflected—The behavior of an analogue-computer simulation of the hypothesized process reflects the characteristics of audio analgesia observed in clinic and laboratory. Moreover, in a recent letter, Mountcastle reports that he has found, in the posterior group nuclei of the thalamus and in the cerebral cortex, pain-evoked neural activity that is suppressed by acoustic stimulation.

Adapted from *Science* **132**:32 (*July*) 1960.



1

Clinical and Laborato

Emergency Tooth Replacement

S. H. Rowberry, D.D.S., Steilacoom, Washington

1. When it is necessary to make an emergency replacement of a denture tooth fill a celluloid crown form of the proper size and shape with a self-curing acrylic of the proper shade.

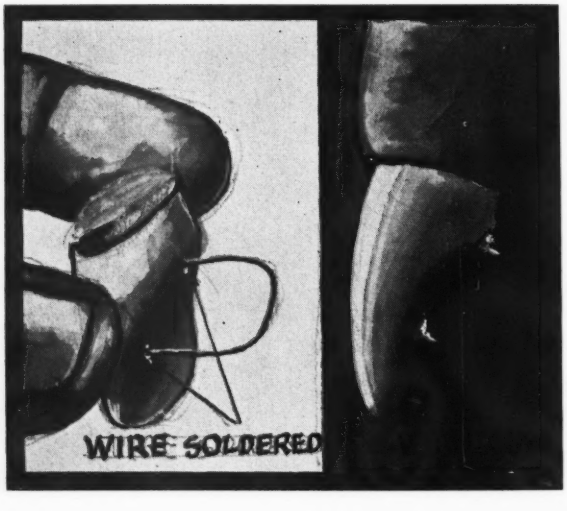
After the material is set remove the crown form.

2

Quadrant Tray for Inlays

Fred Metz, D.D.S., M.D., Denver, Colorado

2. After the teeth are prepared place a large roll of soft gutta-percha over the teeth. Over the gutta-percha put a layer of acrylic tray material. When the acrylic has set remove the gutta-percha. The space provided creates a tray for the rubber impression material.



3

Accurate Seating of Three-Quarter Crowns

George F. Eisenbrand, D.D.S., Wilmette, Illinois

3. To be certain that three-quarter crowns that are to be used as bridge abutments are in proper position in the plaster impression, solder two small wires on the lingual surface of the castings. The wires are cut off after the bridge is assembled.

READERS *are Urged to Collect $10.00*

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10 on publication.

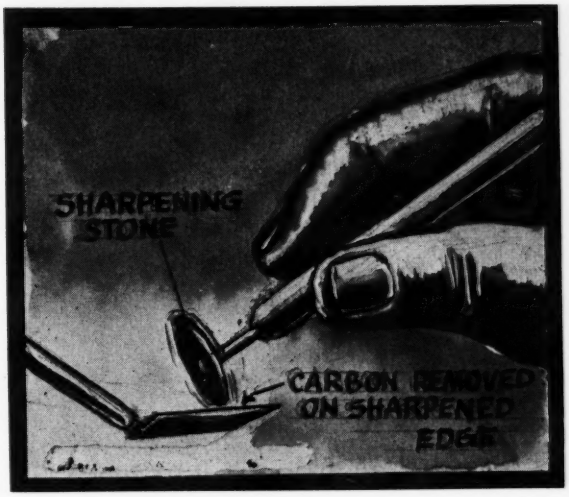
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

A Method To Sharpen Instruments

W. J. Simon, D.M.D., Louisville, Kentucky

4. Rub carbon paper on the beveled edge of the instrument. The removal of the carbon with the sharpening stone will establish the bevel and create the proper cutting edge on the instrument.

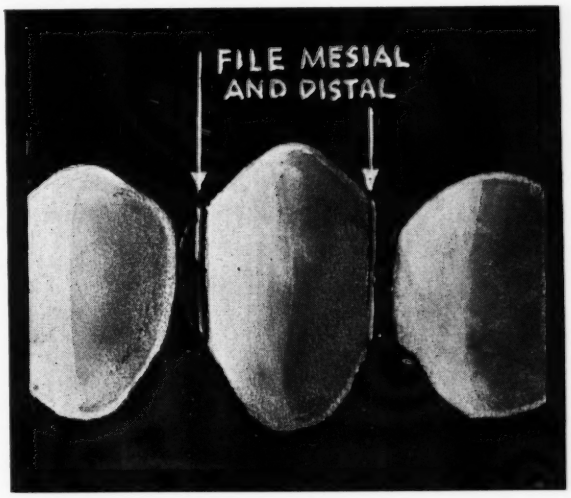


4

An Extraction Technique

R. W. Pedersen, Boyd, Minnesota

5. To facilitate the removal of a tooth disc the mesial and distal contact points. The removal of the proximal areas allows better rotational movement for extraction.

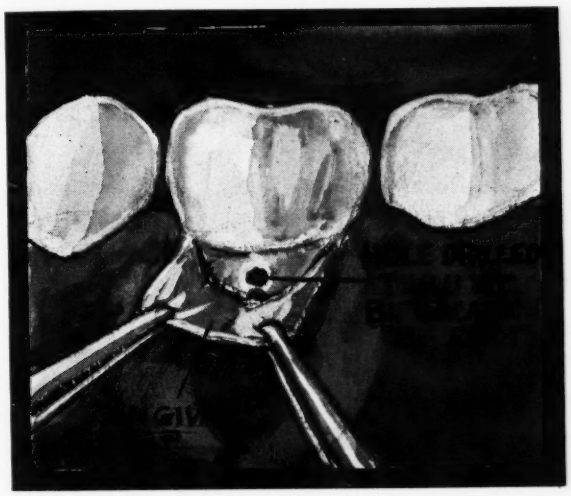


5

Removal of Lower Molars

James N. Breen, D.D.S., Beaver Falls, Pennsylvania

6. Make a small flap at the area of the bifurcation to expose the interseptal bone. Use a medium or large bibevel drill to create holes on the buccal and lingual at the bifurcation. When the beaks of a cow-horn forceps are placed in these openings the removal of the tooth will be made easier.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 438 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois

The EDITOR'S Page

VOLUMES have been written on the subject of internal medicine. To compress the basic knowledge that the dentist should have on this subject into one volume is not a simple task. It has, however, been accomplished by two Philadelphia physicians.[1] It has been done without a hint of superficiality or condescension. The subject matter is well balanced and the emphasis has been made with the clinical needs of the dentist in mind.

As an example of the role of equal status that the dentist should have on the health team Collins and Crane have written: "The dentist must be considered as a consultant rather than as a mechanic. It should be the duty of the dentist to attempt to preserve teeth whenever possible, and not to perform extractions unless, in his opinion, this is required. Apparently healthy teeth must not be sacrificed merely because the dentist is requested to extract them . . . If there is no evidence of infection in the mouth, the dentist will do well to follow his own judgment rather than succumb to the pleadings of a patient (or occasionally a physician) to remove the teeth."

This quotation is evidence that the authors are aware that on occasion the physician, in his authoritarian role, has *ordered* the dentist to extract teeth and has not considered the dentist as a *consultant* of equal status. There is no place in the association between the dentist and the physician for one to arrogate to himself the role of order-giver: they must work together as equal partners.

Brief clinical excerpts on several subjects will suggest the practical tone of this excellent book:

1) *Blood Dyscrasias*—A. Blood studies should be ordered if one encounters: (1) Spontaneous hemorrhages from the gums or mucous membranes; (2) numerous petechiae within the mouth; (3) postoperative hemorrhages not easily controlled by the usual routine procedure.

B. Marked pallor of the mucous membranes.

C. Chronic Vincent's infection.

D. (1) Atrophy of the papillae of the tongue (without evident cause). (2) Persistent sore tongue or sore mouth without demonstrable local irritation.

E. Any ulcerative process within the mouth associated with signs of severe illness, or not responding promptly to accepted medical or dental treatment.

2) *Angina Pectoris*—A. Assure the patient concerning the attacks.

B. Relief of social, domestic, or business strain.

C. Revision of faulty habits, proper rest, recreation, reduction in excesses of alcohol or tobacco, proper eating habits.

D. Treatment of associated diseases (diabetes, gall-bladder, or thyroid disease).

E. Avoidance of exertion immediately after eating.

F. If necessary for the acute attack, nitroglycerin, grain 1:100 to 1:200 under the tongue—if the attacks persist for more than several minutes.

G. Use of theophylline or theobromine in severe cases.

H. Barbiturates in nervous or hypertensive patients.

3) *Rheumatoid Arthritis*—A. Infected foci should be removed as early in the course of the disease as possible, unless the patient is debilitated, or running an acute febrile course with marked joint pain and swelling.

B. During an acute exacerbation of the disease, with marked joint swelling, redness, and pain, plus fever (100° Fahrenheit or above), the patient should be treated conservatively by rest in bed, salicylates, high-caloric, high-vitamin diet, local splinting of the joints. If, however, he continues to grow worse under such therapy, or does not improve within a reasonable period of time (four to eight weeks), cautious removal of definitely infected foci should be undertaken.

G. The first operative procedure should consist of the removal of not more than one tooth. A rest interval of three or four days should then intervene before further extractions are undertaken.

D. Teeth with chronic pulp infections may be potent foci. A tooth may be vital, but diseased.

E. Gingival infection should be eliminated.

The general diseases that are mentioned in the preceding paragraphs are only three of the systemic conditions that are covered in this valuable book.

This book was written expressly for dentists and the emphasis throughout is on the specific medical problems encountered in dental practice.

[1]Collins, Leon H., Jr., and Crane, Martin P.: Internal Medicine in Dental Practice, ed. 5, Philadelphia, Lea & Febiger, 1960.

MEDICINE and the Biologic Sciences

Hearing Aids

The need for hearing aids increases as the geriatric population increases. However, the need and the desire do not go hand in hand. Too many persons refuse to buy a hearing aid and others refuse to wear one.

Often relatives find that nagging and arguing are to no avail. Many times the family physician is consulted in the hope that he can persuade the patient to wear the aid. Probably the most important therapy is emotional support during the adjustment period.

A retraining program is the most direct attack on non-use of hearing aids. The best, most urgently needed hearing aid sounds worst to the patient at first. For years most of these persons have trained themselves to interpret mushy distortion as normal sound. When dulled frequencies are built up, every "s" and "p" shoots through the head like a rocket. A patient must be warned ahead of time that he is going to need a long period of retraining before he is at ease with his aid.

A patient's ego must be built up and he must be encouraged to try harder. If he thinks he is progressing, he will be less likely to discard his hearing aid after a few weeks of trial.

One important means of encouraging use of a hearing aid is to work through the patient's family and friends. The aid must be accepted as a piece of normal, personal equipment. Self-consciousness puts a lot of hearing aids on the shelf.

The emotional build-up must be taken step by step. It is important to get the patient out in family groups or among close friends. All people involved should be warned not to make an issue of the hearing aid. They must talk to the person, not the aid. Contact should be limited to smaller groups at first. Aids work best in small rooms at first without much background noise. Conversation is easier with one person. Usually if a patient can get through the first few weeks easily, the chances are that he will never discard his hearing aid.

Many people associate hearing defects with old age and old age with distinct decline in worth. Reaffirming general good health can go far to combat this feeling. The patient's relatives should be encouraged to show respect for the person, his capacities, and future potential.

Often a patient will stop wearing his aid deliberately or subconsciously to punish or gain attention from a relative who appealed for help. Poor hearing can be a convenient bludgeon. Often a patient can be persuaded to put his aid on again. He needs to wear the aid with a more gradual approach. Someone should read to him 15 minutes a day. The patient should listen for consonant sounds and watch the speaker's lips. Tolerance to background noise should be encouraged. It must be remembered that previous failure to wear the aid shows a need for respect and emotional support.

Eichenlaub, John: *Keep Hearing Aids off the Shelf, General Practitioner* **11**:186-196 (*February*) 1960.

Dermatitis—Allergic Factors

Atopic dermatitis is manifested by itching or burning, redness, and vesicles which may ooze. Usually lichenification occurs later. Any part of the body may be affected although the antecubital and popliteal areas and the face are regions of predilection. In teen-agers and adults, dermatitis may be limited to the hands.

In infants and small children, food allergy may be manifested by an involuntary reaction such as spitting up, fussiness, eructation of gas, vomiting, rash, or diarrhea. If given a choice, infants would avoid certain foods, just as adults do. Older children instinctively refuse troublesome foods. A child will eat unwanted foods, however, if he becomes hungry enough or if the parents are adamant.

Foods that cause gastrointestinal distress, rash, or other symptoms should be entirely eliminated from the diet. If more than 15 per cent of foods in a botanical group affect a child, the entire group should be eliminated.

Eggs, cow's milk, and wheat are the most common allergens. All babies should be breast fed if possible and not given synthetic milk formulas the first few days since sensitization against future use may occur.

The antigenicity of milk may be reduced by boiling for one-half hour. Soybean preparations frequently cause loose bowel movements and sore buttocks in patients allergic to milk. Tapioca, rice, or other cereals in liquid form may be tolerated. Egg cannot be modified to permit use.

When wool is the allergen, rash usually occurs on the outer arms or forearms. House dust, animal danders, feathers, and pollens are the most common inhalant allergens. Patients with house dust allergy usually become worse in cold weather when windows are closed and heat is turned on.

Dogs, cats, birds, rabbits, and horses are possible sources of allergens. Pollen dermatitis recurs at regular times of the year. Such allergens must be removed from the environment.

Cool compresses and cool starch or bran baths comprise the best therapy for acute dermatitis. After two to three weeks, zinc oxide paste may be used for skin dryness. Antihistamine tablets

are given for a week or ten days and may be continued if the drug relieves itching.

Morris, George E.: Atopic Dermatitis: Role of Food Allergy, Ann. Allergy **16**:599-617 (*September*) 1958.

Lung Cancer—Women

Use of cigarets apparently predisposes to epidermoid and undifferentiated carcinomas of the lung but does not influence the incidence of adenocarcinomas. The rate of adenocarcinomas is higher in women than among men. Data comparing the incidence of pulmonary cancer in males and females who smoke are therefore misleading unless the types of tumor are specified.

A remarkable feature of pulmonary carcinoma is the excessive risk among males when compared to the incidence among females. This disparity has been cited to discredit the hypothesis that use of cigarets and lung cancer are closely related. The suggestion has been made that sex differences in duration and rate of cigaret smoking are not large enough to account for sex variation in trends or current rates of pulmonary cancer mortality.

Sex differences can be reconciled by comparing risks of pulmonary cancer among nonsmokers. As shown by several investigations in the United States and abroad, the supposedly excessive mortality of lung cancer virtually disappeared when nonsmokers are also investigated.

The risk of epidermoid and undifferentiated cancer of the lung in women is far greater with cigaret smoking than with any other factor considered. Danger increases with current rate of use and is highest when more than 1 pack is consumed per day. Risks are higher for occasional and former smokers than for total abstainers.

For epidermoid and undifferentiated cancer, all relative risks with respect to smoking history and rate of cigaret use differ significantly from unity at the 1 per cent level. None of the risks for other items considered and none of the relative risks shown for adenocarcinoma differ significantly from unity at the 5 per cent level.

Comparisons of nonsmokers show close correspondence of pulmonary cancer risks in men and women. The estimated annual mortality of lung cancer among female nonsmokers in this country is 3.3 to 3.9 per 100,000. In male abstainers, mortality is 2.1 to 7.9, with an average of 4.2. The smaller number of nonsmokers among men causes the estimated rates to be subject to greater variability.

The slight excess of male over female death rates is no more, and possibly less, than the 40 per cent excess male mortality at ages over 35 in the United States computed for all causes and for specific factors such as pneumonia, influenza, and cancer of all sites except the respiratory and reproductive systems.

Haenszel, William; Shimkin, Michael; and Mantel, Nathan: A Retrospective Study of Lung Cancer in Women, J. Nat. Cancer Inst. **21**:825-842 (*October*) 1959.

Vertigo—Causes

Vertigo is generally due to peripheral rather than central disturbances. If Meniere's disease or other peripheral lesion is recognized promptly, the patient can be reassured that symptoms are not due to serious brain disease. Also, unnecessary spinal puncture and pneumoencephalographic examination will be averted.

The ears, nose and throat, and cranial nerves should be examined. Gait is observed and motor strength and reflexes tested. Roentgenographic examination of the mastoid, petrous pyramids, internal auditory meatus, and sinuses may be advisable. If a central lesion is suspected, additional neurologic tests are performed.

With peripheral disease, vertigo is generally severe and nausea is common. In contrast, vertigo is often of slight intensity and nausea is rare with central lesions. About 90 per cent of patients with vertigo have disease of the labyrinth or its central lesions.

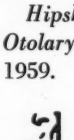
Meniere's disease is the commonest cause of vertigo. Tinnitus and unilateral hearing loss are the outstanding signs and recruitment is the rule. Vertigo starts suddenly and is postural and of short duration.

Vertigo due to head injury may be accompanied by vestibular nystagmus. Blood may be observed in the middle ear shortly after longitudinal or transverse fracture occurs. Hearing is impaired until blood is absorbed, usually within three weeks. Labyrinthine concussion also provokes a high-tone loss. Either catarrhal or suppurative otitis media may be accompanied by vertigo. Fistula of the labyrinth requires surgery.

Patients with paroxysmal positional vertigo will frequently cry out and grasp for support. The episodes are brief and usually cannot be reproduced for at least thirty minutes. Nystagmus comes on after a latency period of a few seconds and is of large amplitude. Tinnitus and deafness do not occur.

Vertigo is an early symptom of multiple sclerosis. A sclerotic plaque may be deposited in the area of the eighth nerve. With epilepsy, aura, loss of consciousness, cry, fall, and tonic or clonic convulsions will make the diagnosis. Many virus infections provoke vertigo. Also vertigo may be an outstanding feature of anxiety.

Hipskind, M. M.: Vertigo, Arch. Otolaryng. **69**:385-389 (*March*) 1959.



Plummer-Vinson Syndrome in Women

The abnormally small mouth is often a striking feature in a woman with the Plummer-Vinson syndrome. Many times this manifestation is not well recognized. Other symptoms include dysphagia, perleche, atrophy of the mucous membranes of the tongue and pharynx, loss of teeth at an early age, loss of hair, nail defects, leukorrhea, achylia refractory to histamine, and iron deficiency.

The small size of the mouth can be demonstrated quite simply. The mouth is drawn broadwise with two spatulas until uncomfortable for the patient.

(*Continued on page* 442)

Contra-Angles

Impressions of European Dentistry

WHETHER they call themselves zahnarzt, surgeon-dentist, or dentista, the dentists in Europe admire American dentistry. If there is an anti-American sentiment I did not discover it in a series of interviews among European dentists. Quite the contrary. Every dentist that I talked to was cordial and friendly to a visiting colleague from the United States.

With the exception of the dentists that I talked to at the meeting of the Fédération Dentaire Internationale in Dublin and those that I visited by invitation in England and France the interviews in other European countries were done "cold." I saw a sign that announced a dental office and walked in. I presented my card (usually to an attractive receptionist) and waited for the dentist to receive me. None was "too busy."

In Europe, as in the United States, the reception room gives a clue to what the operating room will be like. Generally, the reception areas are larger than in dental offices in the United States. I saw original oil paintings, porcelain stoves, elegant rugs, a careful selection of current magazines, parqueted floors, silk draperies. At the other extreme there were furnishings that had clearly spent their better usefulness in a home before they were installed in the dental reception room. This same tendency to the second-hand I have seen in the United States.

The general status of cleanliness (despite remarks made by tourists concerning European hotels and restaurants) was good. Fresh air is less of a fetish among our European colleagues. Even in hot weather the windows were closed. Air conditioning equipment was not observed in any office—except in one in France.

Both the operating and reception areas were considerably larger than one usually sees in the United States. Rents here are so high that dentists cannot afford the luxury of expansiveness. In many European offices six or eight persons may sit in comfort in the reception room. There are few dental offices in the United States that will accommodate more than four people in any degree of comfort.

Spaciousness when found in the reception area was usually carried into the operating rooms. The European dentists that I visited do not carry on their daily practices in the close quarters that are usually seen in the United States.

The equipment that I saw (chairs, units, cabinets, sterilizers) was not as attractive as one usually sees in dental offices in the United States. Although the manufacturers of dental equipment in Europe are designing and building better equipment than they did 10 years ago their devices are still below United States standards. We may ex-

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pect, however, that with the present vigor of industrial expansion throughout western Europe there will be significant improvement in dental equipment.

I did not find one "short sleeve" operator. (This is more than I can report from some of my visits throughout the United States.) All the dentists that I visited wore clean, *white* uniforms of professional design. There were no weird colors or flamboyant styles: no pastels or strange fashions that one may encounter in the corridors of any large professional building in the United States.

Many European dental offices are in homelike buildings rather than in "downtown" office space. The conversion from previous living quarters into professional offices has been done with imagination and skill.

I saw no glaring or unethical signs to gain attention. Where brass nameplates were used they were bright from daily polishing.

The language barrier between the dentist and his United States visitor was occasionally a formidable one. In some places our communication was inadequate. At other times entirely satisfactory.

Most European dentists have an elementary skill with English speech. They do better with *their* English than most of *us* in the United States do with a foreign language. The people who serve tourists daily (waiters, porters, employees in railway stations and airports) develop their linguistic skills by constant use. European dentists, it seems, do not encounter too many emergency situations with their foreign visitors that require special knowledge of other language systems. Nevertheless, European dentists are more facile with English than most of us are with German, French, Italian, or Spanish. I plead guilty under my own accusation.

Several of our European colleagues were prompt to tell me in a friendly way that they were physicians before they entered dental training. This certainly gives them an advantage in biologic comprehension, but does not necessarily make them better *dentists* in the skills of dental restoration. In the dental offices that employed in-service private technicians I saw some excellent prostheses in the process of fabrication: as good as anything in the United States. In cases, however, where the dentist depended upon out-service technicians I gained the impression that the quality of technical skill was below the standards of the commercial laboratories in the United States.

All the dentists that I visited were university trained. I saw none of the offices or services that are performed by "dentists" who lack formal training, but seem to be in business throughout western Europe under different names.

There is the same inglorious tide rising in western Europe as in the United States: the attempt by technicians to invade the field of dental care and perform dental operations that they are not trained or qualified to execute. This competition from the dental technicians has been going on in Europe for decades. It is a fairly recent "importation" into the United States. There have always been "bootleggers" in dentistry in this country, but the concerted and vigorous effort on their part to gain legal status is a recent development.

Evidence of dental disease and dental neglect is widespread throughout Europe. One could fall into error and assume that dental disease was more prevalent in Europe than it is in the United States. That would be a fallacy. We must remember that definitive dental care is related to the economic conditions in a country: the more prosperous a nation, the more people are attracted to dentistry as a career and the more people avail themselves of dental treatment. As the gross national income of a nation is increased and people have money to spend after buying the basic necessities they will avail themselves of dental care. All the dental health education imaginable will

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help change this clinical picture of inflamed gingivae*

FIRST VISIT
Patient with severe sore mouth; VINCE oxygen rinse prescribed.

1 WEEK LATER
Same patient—one week later; VINCE oxygen rinse plus prophylaxis.

5 WEEKS LATER
Same patient — five weeks later, following gingivectomy.

CONVINCE YOURSELF

1. **VINCE** *supplies safe, therapeutic oxygen to inflamed gingival tissues*
2. **VINCE** *cleanses tissues and interdental spaces with bubbling nascent oxygen*
3. **VINCE** *combats anaerobic bacteria by providing therapeutic oxygen*
4. **VINCE** *aids in control of bleeding because of its effective hemostatic action*

Remember: Prescribe safe, nonirritating VINCE at the first indication of inflamed or bleeding gums, tooth mobility and receding gums.

Safe, proved VINCE the oxygen rinse is indicated for every case of gingival inflammation

VINCE®

SODIUM BORATE PEROXYHYDRATE

THE OXYGEN RINSE

*Typical Case History From Files of Standard Laboratories

WRITE FOR A GENEROUS SUPPLY OF PROFESSIONAL SAMPLES.

STANDARD LABORATORIES, INC.
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not prompt people to increase their demand for dental care unless they have the money to pay for the treatment or unless their government is ready to buy it for them.

The analysis of dental conditions in Great Britain as made by *The Economist* is a good description of conditions that prevail througout western Europe:

"There are three reasons why the British have such bad teeth, compared even with other prosperous countries. The first is the public's surprising indifference to dental care—indifference that the millions of pounds now spent on other beauty aids like deodorants, cosmetics, soaps, and perfumes, seem to have done little to alter. The public, especially in the north of England, still tends to take the view that false teeth are a perfectly good substitute for real ones and that the best answer to bad toothache is to extract the lot and use dentures (the latter at a total cost of eight pounds ten ($23.80) the set, but half of it paid by the state). Parents often resent having to take their children to the dentist at all; one father's reason for this, 'that in his family there was a tradition of giving the children a set of false teeth for their twenty-first birthday,' is reported to be surprisingly typical. Attitudes toward dentists are not only regional (varying between the North, which shuns them, and the South, which tolerates them), but also depend on social class. While most boarding schools are able to insist on one, if not more, visits to the dentist a year and on frequent tooth cleaning, state schools have no such powers. It seems a fair assumption that nearly the whole of that tenth of children who never clean their teeth in any way are in the state education system.

"The second factor making for bad teeth is the British diet. With its high content of sugar, biscuits, sweets, and pulpy bread, it is notoriously liable to lead to tooth decay. In particular the close correlation between bad teeth and sweet-eating (a British specialty, average expenditure 1s 10d. per head a week) (24c) is beyond doubt. During the war children's teeth became much healthier; they continued to be so until 1953, when the ending of sweet rationing started the present steady decline. Comparison over a longer period is even more painful. Of a sample of teeth of Neolithic Age men whose skulls have been dug up in Britain and examined by experts, 8 per cent have been found defective; of a sample of Bronze Age teeth 3½ per cent; of a sample of seventeenth century teeth (when sugar was still a luxury) about 29 per cent; and of a sample of postwar teeth 48½ per cent.

"The other main reason for the bad state of children's—and adult's teeth—is the chronic shortage of dentists."

In the European countries where dental benefits are included under a compulsory health insurance system both the public and the profession seem to be satisfied with the arrangement. Of course, the public would like more and better dental benefits and dentists would like a higher income for their services. The principle of a government system of dental care is accepted and does not initiate the kind of violent debate that one hears among

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CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 428 *and* 429)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor
DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestion submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

American dentists. There is no mention of "state or socialized" medicine (or dentistry) by either the people or the profession. Compulsory, tax-supported health insurance with treatment benefits is accepted as one of the realities of a social security system that also includes old age and unemployment benefits of various kinds.

Dentists have a unique opportunity to help improve international relations. A free interchange of ideas among dentists of the world through publications and frequent visits, back and forth, among dentists of the world would plant seeds of understanding that help create international good will. This kind of grass root diplomacy, if carried on by all professions and business, will produce an atmosphere of common trust and universal purpose. The Fédération Dentaire Internationale is exemplary in such a mission and should be supported by dentists everywhere.

—E.J.R.

Medicine and the Biologic Sciences

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The width is then measured. In normal women, the average breadth is 11 centimeters. In women with the Plummer-Vinson syndrome, the width may be as little as 8 centimeters.

Esophagoscopic examination often shows leukoplakia and fissures and cracks that bleed easily, suggesting a precancerous condition. Although carcinoma of the esophagus is generally considered a disease of elderly men, the incidence in women rises sharply in geographic areas where Plummer-Vinson syndrome is common. Women with esophageal cancer often have had prolonged difficulty with swallowing.

Kruisinga, R. J. H., and Huizinga, Eelco: The Too Small Mouth in Patients with Plummer-Vinson Syndrome, Ann. Otol. Rhin. & Laryng. **68**:115-121 (*January*) 1959.

Advertising Index